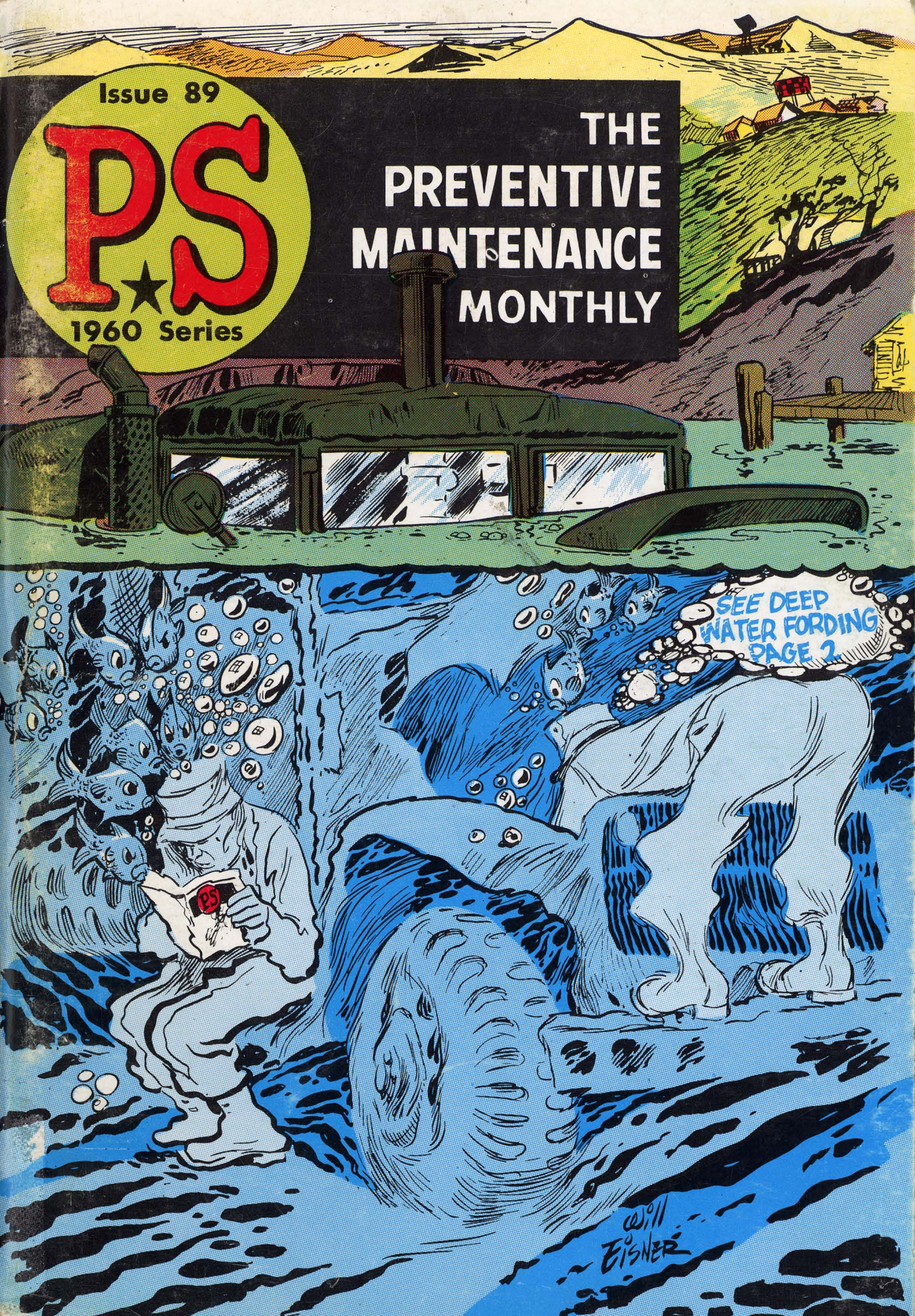
Issue 89
PS
1960 Series
THE PREVENTIVE MAINTENANCE MONTHLY
SEE DEEP WATER FORDING PAGE 2
PS
WILL EISNER

Dear Half-Mast,

Looks like we're off to a rat race again, and I'm wondering where we stand on MWO's that've now been rescinded.

Some of our vehicles stood in storage quite a while, and the MWO's said not to move vehicles from storage to do the work. Now that we're putting them in service, the MWO's have been tossed out the window.

So now I'd like to know:

Do we still have to make these modifications?

If so, are the parts still being stocked?

If the MWO's are not to be applied now, will we get gigged when inspectors find they're missing?

If a vehicle or equipment gets damaged because a 3rd or higher echelon MWO wasn't applied, who's responsible when a statement of charges hits the fan?

Sgt G. H. L.

CASE CLOSED

Dear Sgt G. H. L.,

It's safe to take 10 for a breath of air, Sarge, 'cause those rescinded MWO's are goners. They're not to be applied.

MWO's that've been rescinded--by the numbers--are considered non-essential. And that's an Army way of saying they're not needed any more--period. So, if you get troubles cruising around with equipment that didn't get one of these rescinded MWO's applied, the troubles won't be gigs from the inspector.

You're to let bygones be bygones, too, even if you know where there's a stock of parts and kits that were meant to be used to install these rescinded MWO's. Using this "salvage" to install a modification that's now considered non-essential is against DA policy.

Where a modification wasn't made while the MWO was in effect, it's assumed that the work wasn't done because the CO--where the equipment was at the time--passed it up because he couldn't or didn't get parts or didn't have time to apply the MWO, or he got an item by transfer recently.

Nobody gets pinned with a statement of charges unless there're facts to show that somebody didn't follow the CO's rules in doing the work he was told to do.

But don't go assuming that all of the <u>old</u> MWO's are being mustered out. Some that've served more'n a two-year hitch are still rated essential to reduce maintenance, avoid serious damage, or remove safety hazards. Check DA Pam 310-4 to see what MWO's your equipment needs. Install 'em pronto, or--if they're for higher echelons--notify your tech service support.

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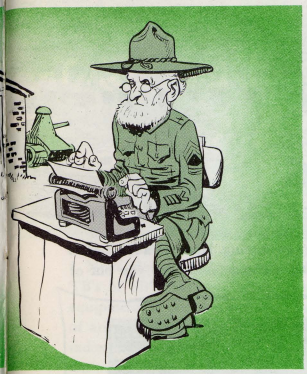

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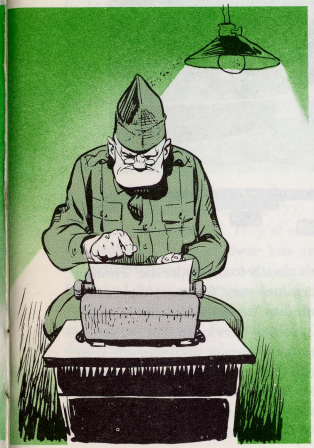

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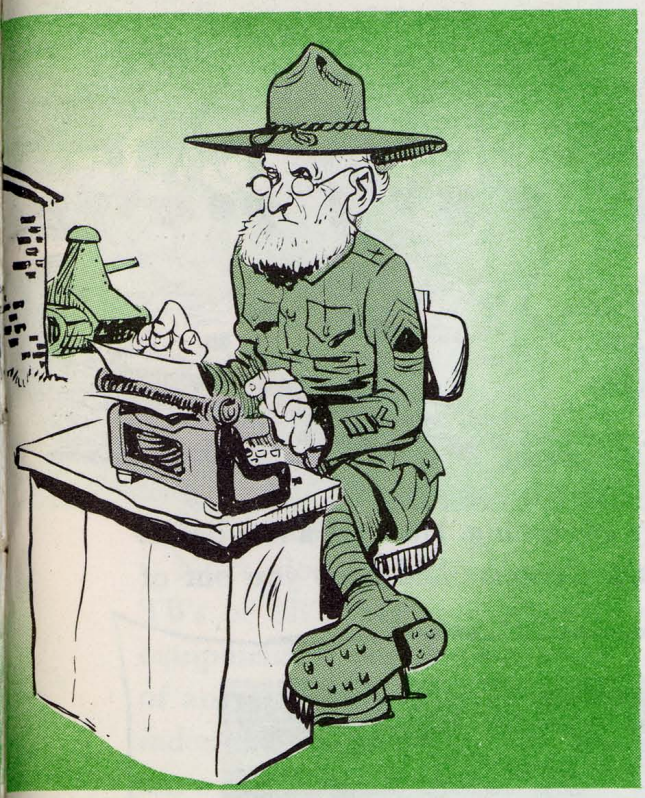

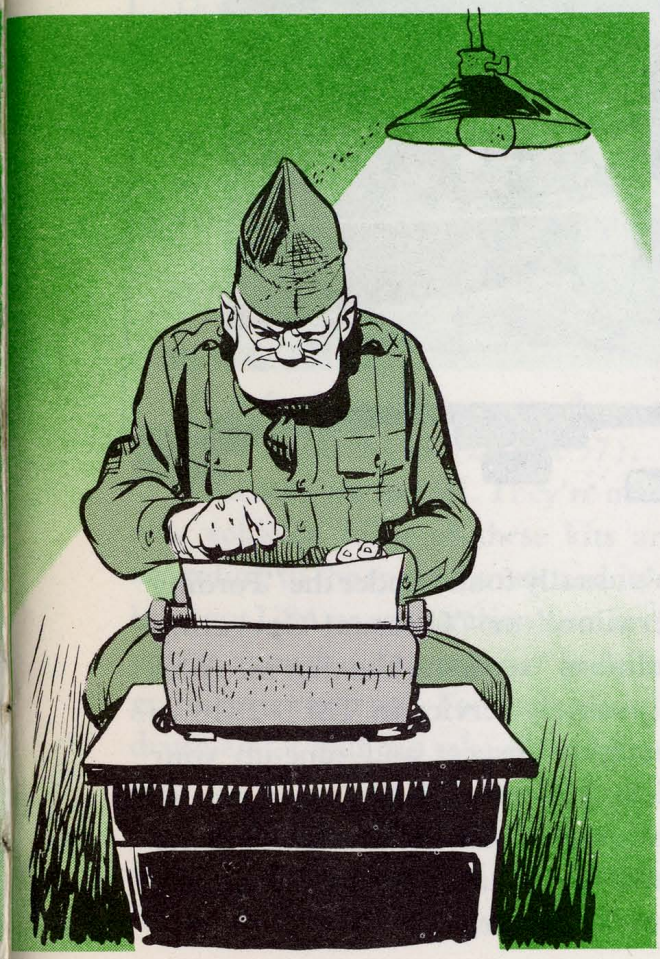

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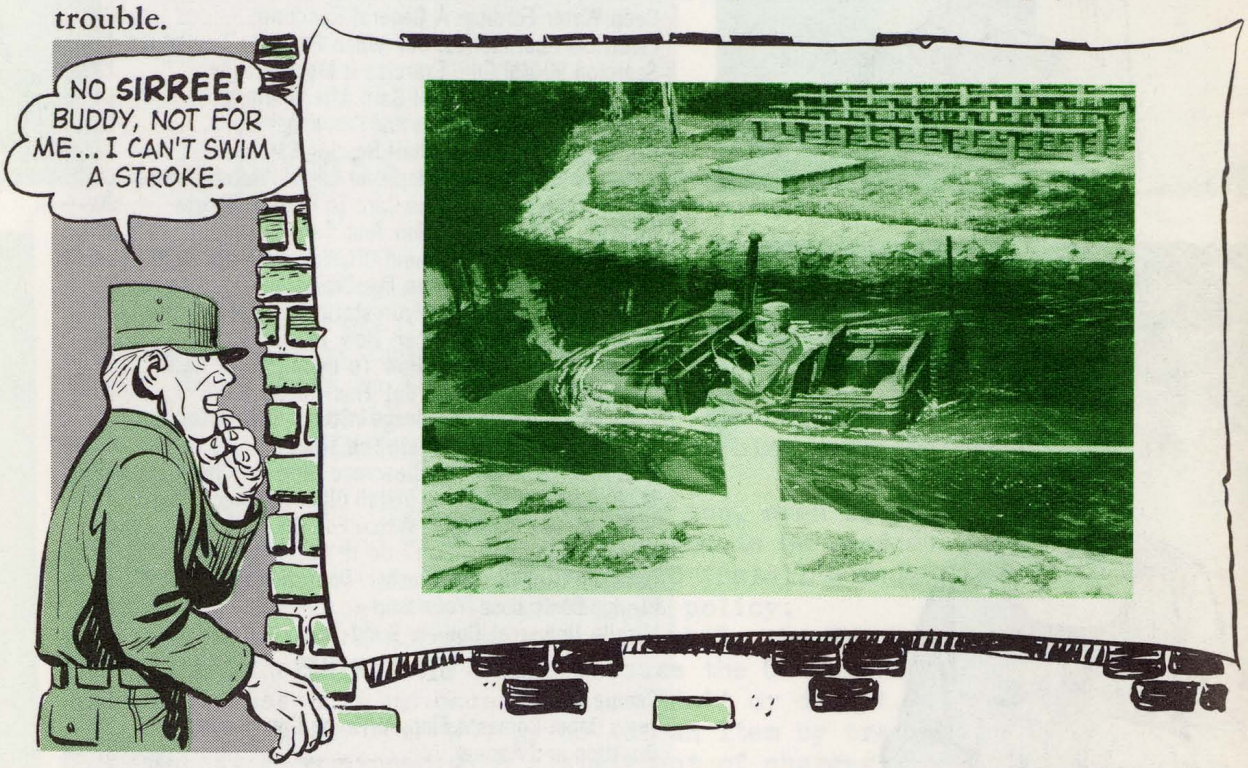

BASIC CHORES:

First thing you wanna do is pick a driver who can swim. It's not likely you'll ford in depths over 6 feet, which isn't too deep for non-swimmers but a qualified swimmer is less easily shook-up in case of the unexpected.

Next dig out your vehicle's TM and go over all the info on fording. The info's usually found under the "Fording Operation" or "Unusual Operating Conditions" sections. Use that info plus the quarterly service in TM 9-2810 to thoroughly inspect and tune-up your vehicle. However, there is no point in pulling the wheels, because you're going to have to do that chore after you come out of the water.

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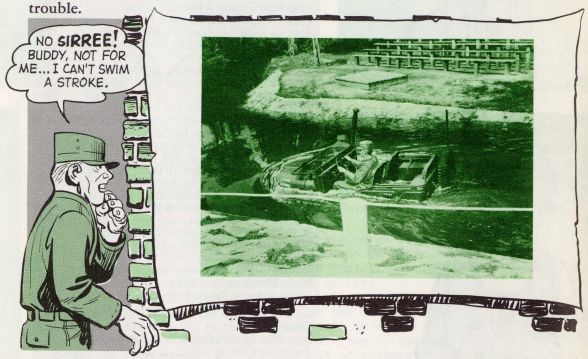

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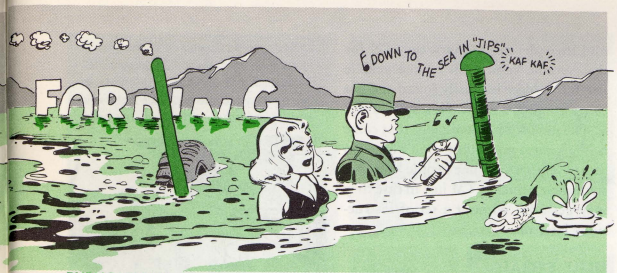

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What fording kit your truck or tank gets is outlined in SB 9-155 (23 Oct 57).

These kits are special. They're made to fit specific vehicles. Most of these kits are designed according to the type of truck and its serial number (not USA or registration number). So before you're issued a fording kit make sure you're getting the right one. For example, a G742-series deuce-and-a-half can take either of two different kits.

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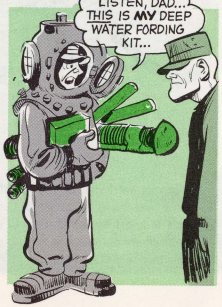

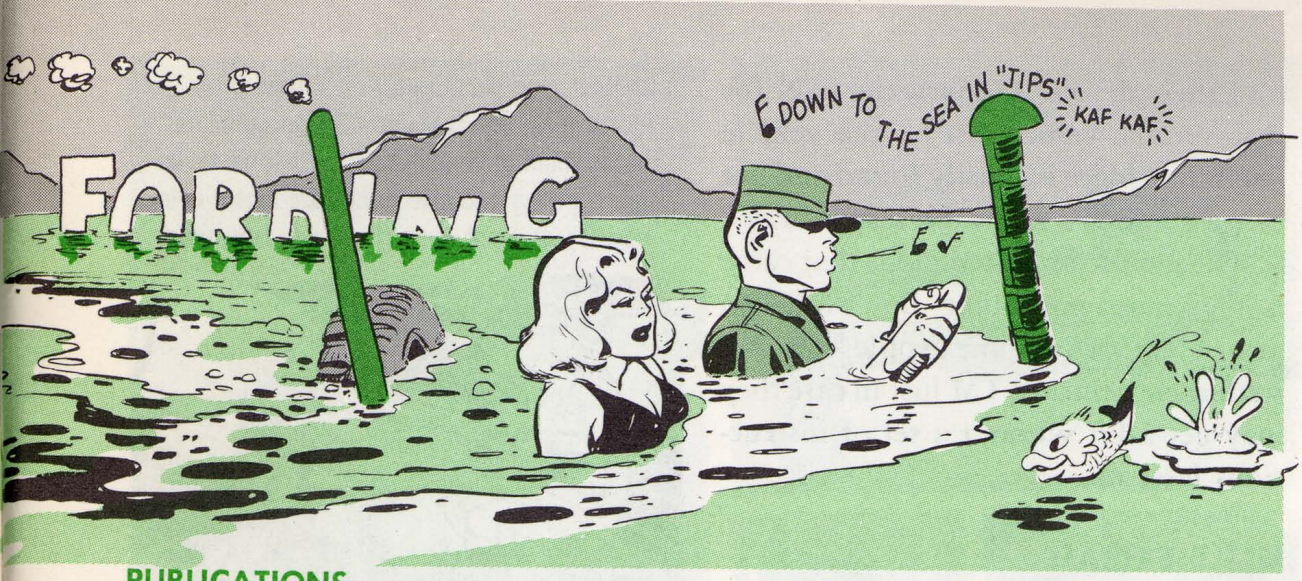

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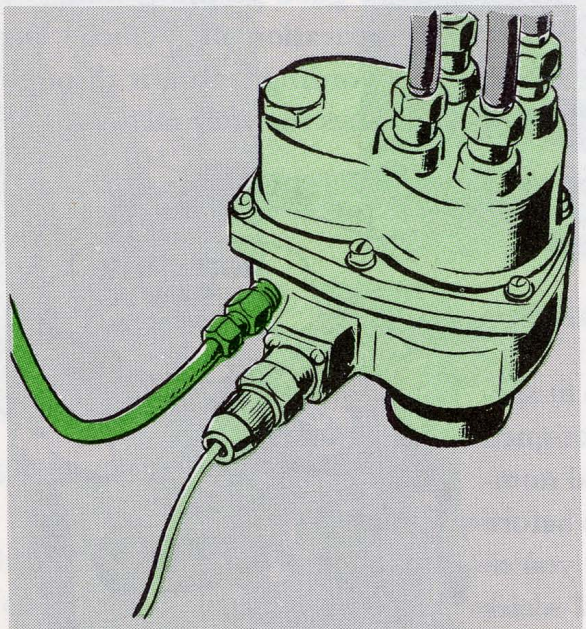
told their drivers to mark the FSN for that specific vehicle kit on the vehicle itself, in a place it's easily found and not bring a squawk from the inspector.

The mounting instructions that come in the kit are important—don't lose 'em or toss 'em away. Some people keep 'em with their vehicle's TM just in case they may get a kit without a set of instructions later on.

LITTLE EXTRAS:

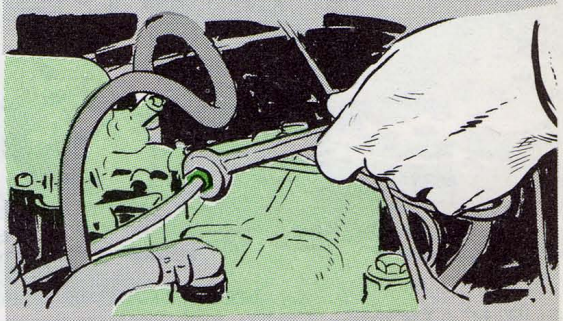
There's some things that you won't find in your vehicle publications that you've got to do before fording. These are the little "extras" that could mean the difference between a ride or a swim.

So, taking a Jeep for example, here're those little extras you wanna do. (If your vehicle is of another G-series, these still go)



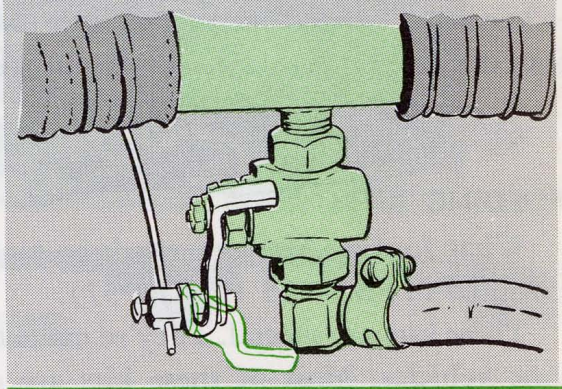
1. On your distributor, be very sure that the positive vent line is in position. It's easy for people to forget that or let it go. (It's down underneath the distributor on the Jeep and it's a little hard to get at.)

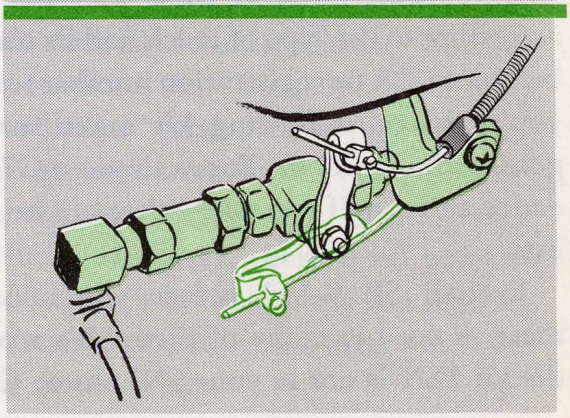
2. Next, you wanna go over all the lines on your engine—the fuel lines, the vacuum lines, the ventilation lines. Check each one to be sure it's snug and also to be sure that it is in properly and not cross-threaded. You better



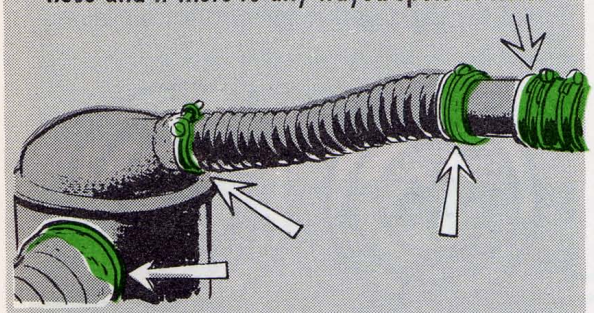
slack each fitting off just a hair and then bring it up nice and snug. Don't twist 'em off. If anybody has fouled one up, cross-threaded or stripped it or left it loose, be sure to get it fixed.

3. Now take a look at both your fording valves and be sure they're installed correctly on the vehicle. (On the Jeep, both levers should be forward for the highway and back for fording. Be sure these valves are not turned around.)

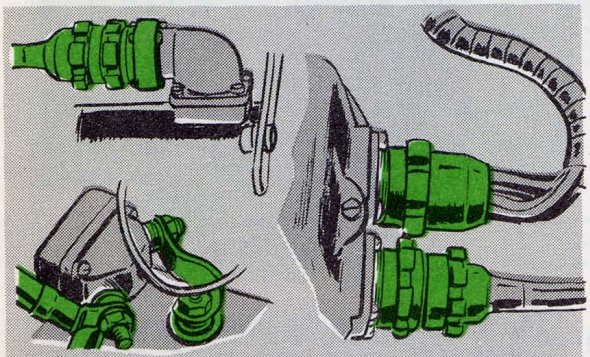




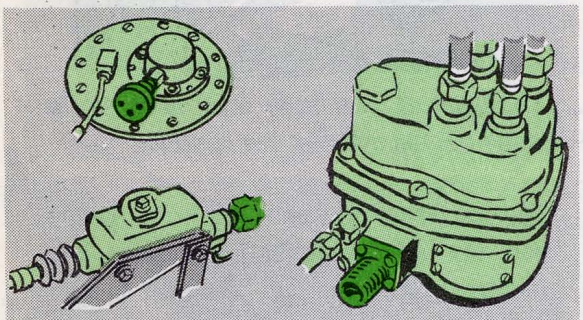
4. Then start in on your induction system. Check the air cleaner from the snorkel right through to the carburetor. Examine your air hose and if there're any frayed spots or holes



in it be sure and tape 'em up with non-**hygroscopic** tape (FSN 8135-266-5016 for 2-in roll, FSN 8135-269-8123 for 4-in roll) or replace the hose.

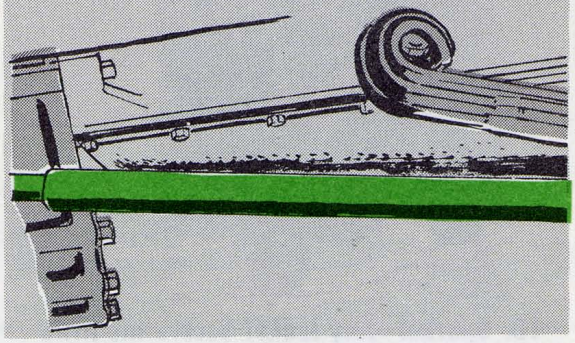


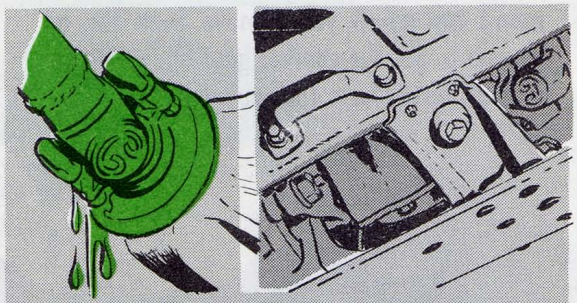
5. Generator cables, generator regulator, starter—Cracks or loose covers. Cables snug and tight?



6. These parts require ventilation: Brake master cylinder, fuel tank, distributor housing. In air brake equipped trucks, of course, the air compressor has a vent line. The differentials on the G479-series trucks have vent lines, others have vent valves. Check all these vent lines again and be sure they're tight and not cross-threaded.

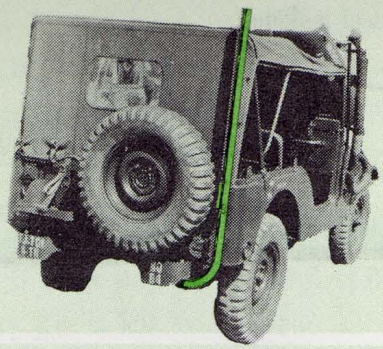
7. Crankcase, differential and transfer case—Any signs of leaking?





8. Give the vehicle a full grease job other than pulling the wheels.

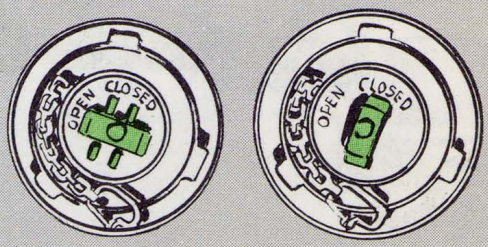
9. Exhaust extension—Snug and secure?



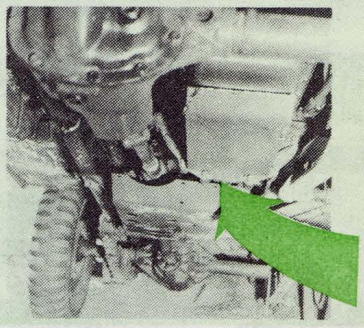
10. Snorkel—Any leaks? Secure the little round top which you remove from the air cleaner to put the snorkel hose on, to the top of the snorkel hose (¼-ton's only).

11. Now drop your top and windshield so you can get away from the vehicle if you should drop into an undiscovered hole or have other similar troubles.

12. Check your fuel tank filler-cap. If you have the new type with the hand-operated air-vent valve, set it in the fording position. The cap without the valve must be seated tight. Go over the cap's gasket for possible air leaks.



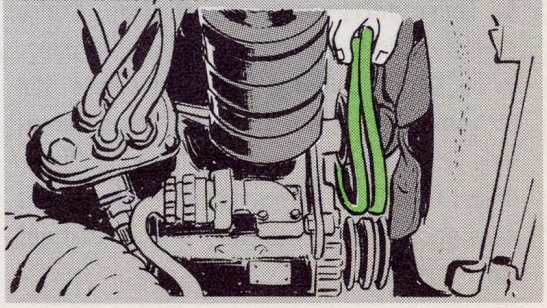
13. Put the flywheel-housing drain plug in place—this goes for all vehicles.



14. Now take out the manuals and forms and anything else that's soakable. This box could be sealed but it won't stand deep-water fording.

15. Open all your body drain holes so the water can run out after you're across.

16. Just before you enter the water, loosen your fan belt. Except the G-742 series 2½ tonners . . . their fans are designed to turn under water, too.

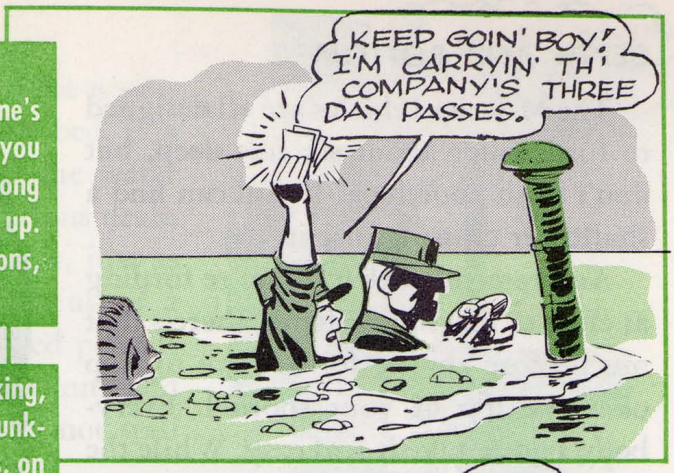


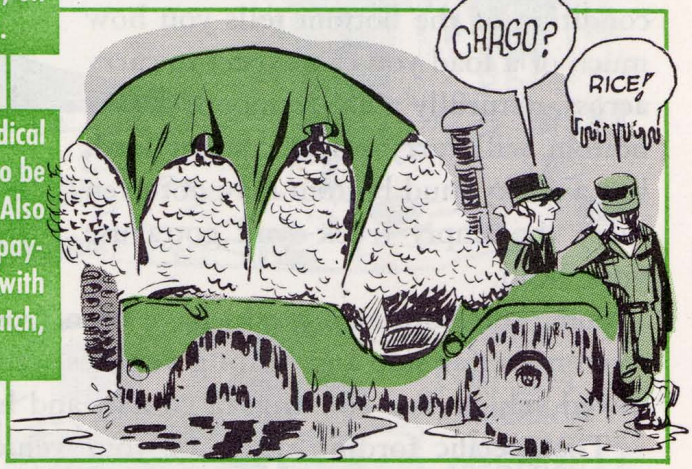
CARGO:

It's best to ford with no cargo but most time's it's not possible. You can ford any cargo you need to take and hold enough ground long enough to let the engineers get a bridge up. That is, weapons, ammunition, canned rations, tools and so on.

Carry small items which cannot stand dunking, or which would need a lot of work after dunking, like fire control instruments or radios, on top of the load where they won't get wet.

Food, bedding, publications, clothing, medical supplies, etc., are the cargos that'll have to be handled in a way that'll keep 'em dry. Also it's risky to cross with a full cross-country payload. You may have to share your load with other trucks or make a couple of trips, natch, if it's possible.

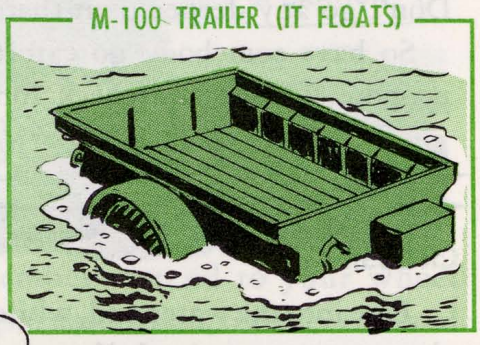


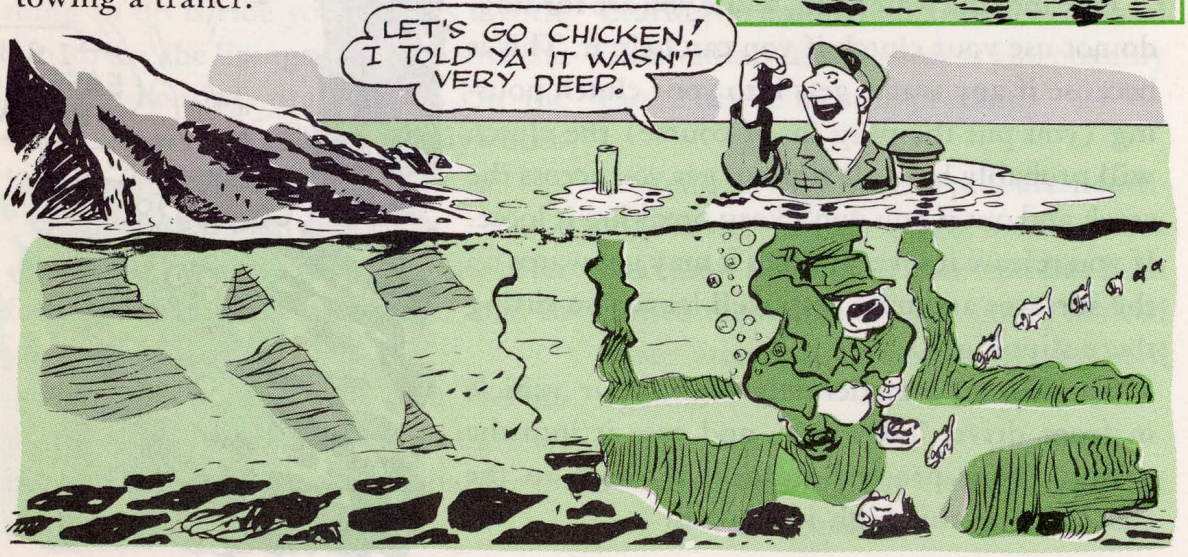


TRAILERS:

The amphibian-type trailer is a snap. These you can unhitch and float across. And they're the babies you can use for cargos that must stay dry. Heavy loaded trailers can be winched across once your truck gets on the other side. Or a wrecker on the other side can help you across while you're towing a trailer.

M-100 TRAILER (IT FLOATS)





DEPTH AND BOTTOM:

The M-series vehicles are all designed to ford water about six feet deep, but don't push your luck. If you can find a shallower crossing, use it.

And remember that if you're fording at close to maximum depth, there's that much more chance for a wave to slop over the top of your snorkel. Everybody's gotta take it real easy. While the condition of the bottom tells you how much of a load you can expect to carry across, naturally a hard, smooth gravel bottom will carry a full combat load, but a sticky mud bottom may not even carry the empty truck—you gotta use your head.

Some soft-bottomed creeks have been crossed by rigging a snatch block to a tree on the far side and pulling vehicles across with the winch on a wrecker. The towed vehicle was running, of course, and helping all it could.

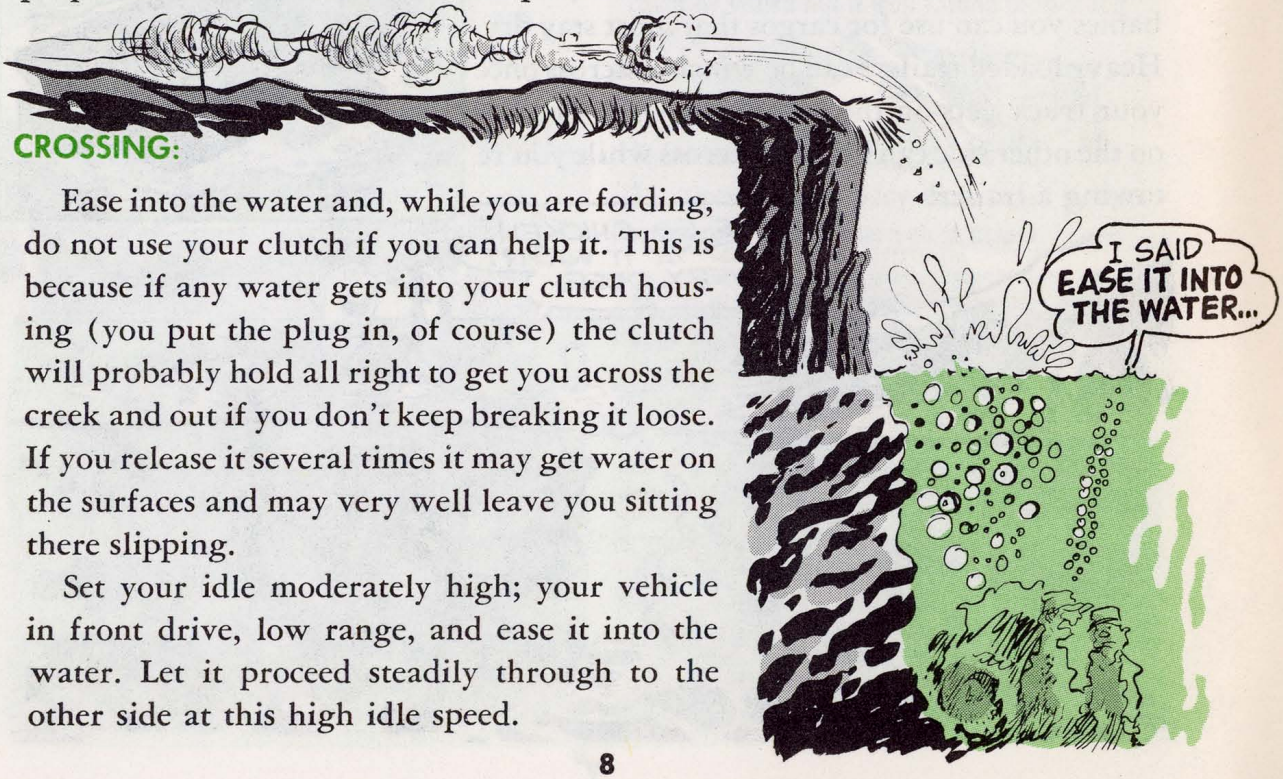
The specific fording depth of your vehicle is found in most of your TM's. Don't go any deeper than that depth.

So have somebody go carefully over the bottom of the creek in which you propose to ford and check for depth and soundness of bottom.

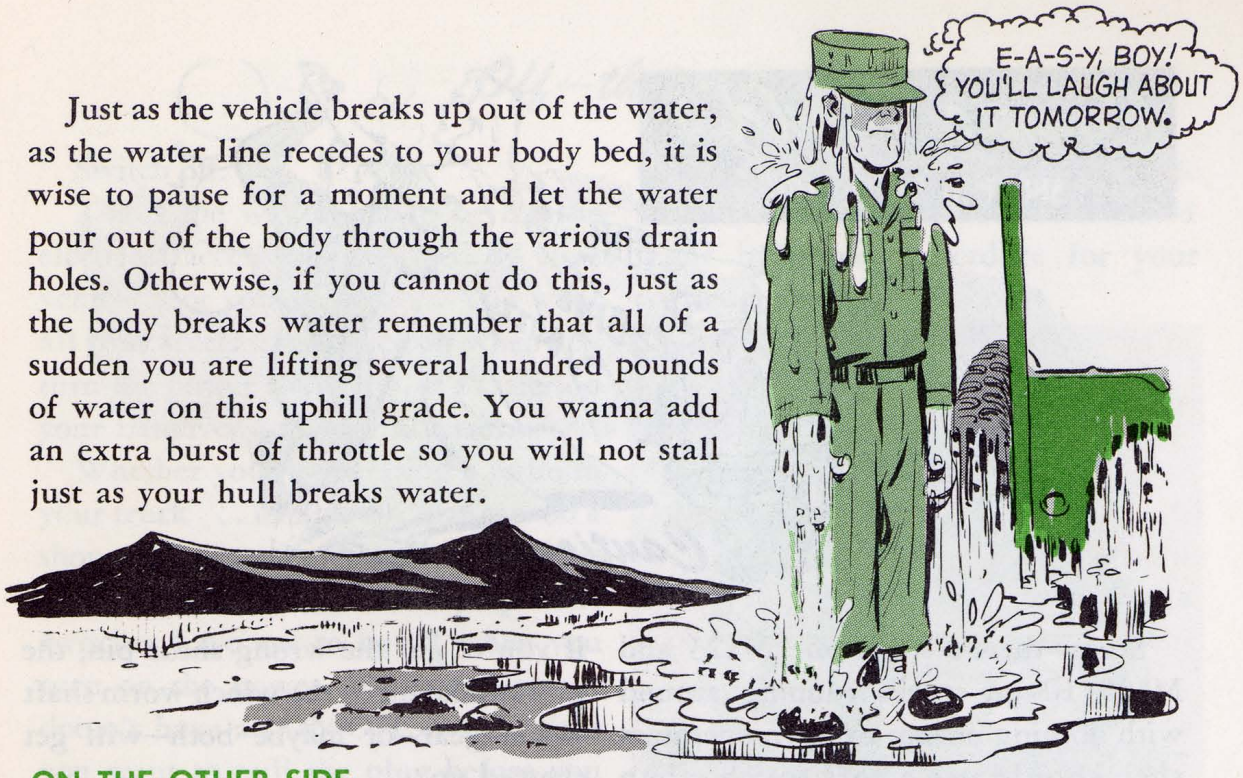
CROSSING:

Ease into the water and, while you are fording, do not use your clutch if you can help it. This is because if any water gets into your clutch housing (you put the plug in, of course) the clutch will probably hold all right to get you across the creek and out if you don't keep breaking it loose. If you release it several times it may get water on the surfaces and may very well leave you sitting there slipping.

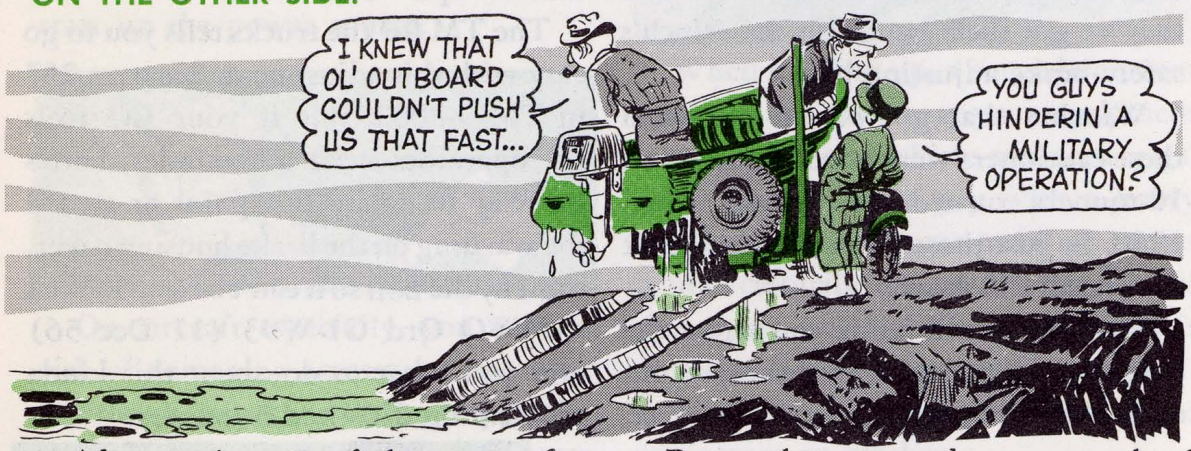
Set your idle moderately high; your vehicle in front drive, low range, and ease it into the water. Let it proceed steadily through to the other side at this high idle speed.



Just as the vehicle breaks up out of the water, as the water line recedes to your body bed, it is wise to pause for a moment and let the water pour out of the body through the various drain holes. Otherwise, if you cannot do this, just as the body breaks water remember that all of a sudden you are lifting several hundred pounds of water on this uphill grade. You wanna add an extra burst of throttle so you will not stall just as your hull breaks water.



ON THE OTHER SIDE:



After you're out of the water, first thing to do is ride your brakes a little way to dry the linings. Then remove the flywheel-housing drain plug. On the G749-series trucks, drain the flywheel-housing and put the plug back in.

Tighten your fan belt.

At your earliest chance, do the after fording operations as spelled out in your vehicle's TM.

In combat, of course, you can do without this for as long as you have to, but the longer you wait, the harder on the vehicle.

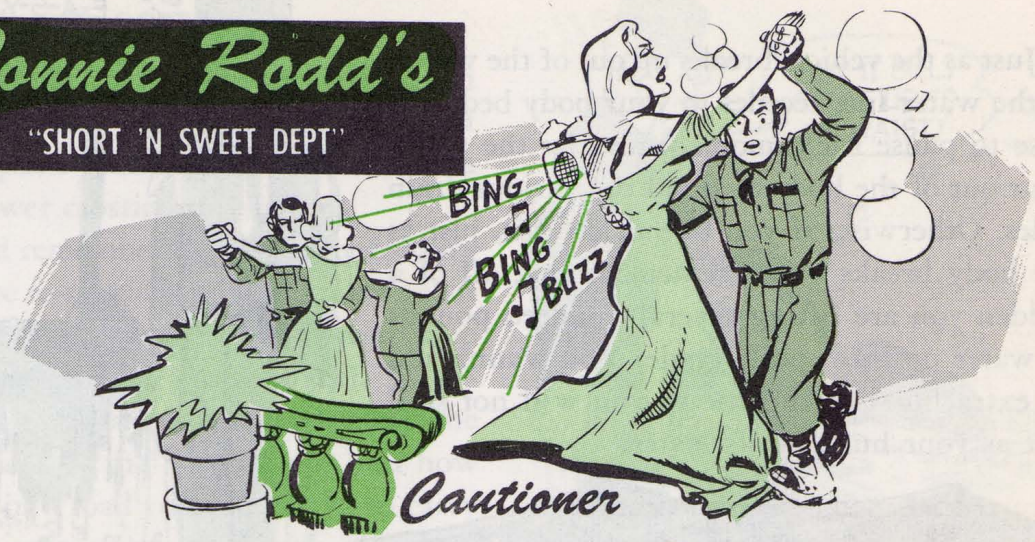
Remember—attend to your wheel bearings,transmission, transfer case and differentials just as **soon** as you possibly can. They're most important.

And you may have to pull after-fording service on your cargo, too. It stands to reason that a howitzer that has been pulled through a creek is going to need some attention before it can be used again.

When fording, let common sense be one of your guides.

Connie Rodd's

"SHORT 'N SWEET DEPT"



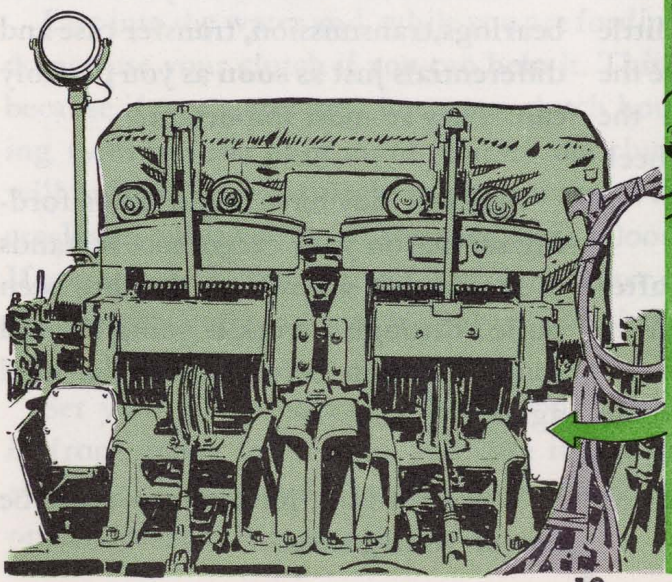
Seems there's still some M123 and M125 10-ton trucks running around with nothing on 'em to warn operators they should use a soft touch when they've got their hands on the winch's safety-brake adjusting bolt.

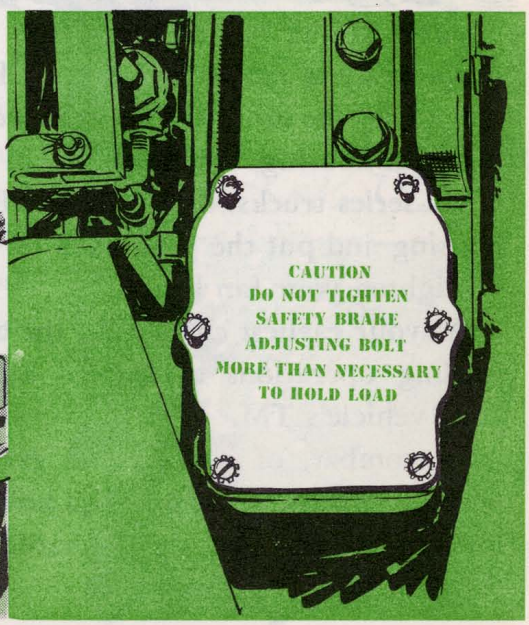
Winches that got passed up when these cautioners were handed out are on 10-tonners turned out before April 1958. So just those put out before that date need a look-see.

Troubles you'll see if you screw the bolt in too tight could be a sheared pin or broken brake bands—or, worse yet, if you've got the wrong shear pin, the power take-off or the winch worm shaft worm gear—or maybe both—will get chewed up.

The TM for the trucks tells you to go easy with this adjustment. See para 257 in TM 9-8002. But if your CO feels the operators need a reminder, here's the way to do it: Just paint or stencil the warning on the brake housing cover, right by the bolt so it can't be overlooked.

MWO Ord G1-W93 (11 Dec 56) told you what to do about this kinda problem on 2½- and 5-tonners.





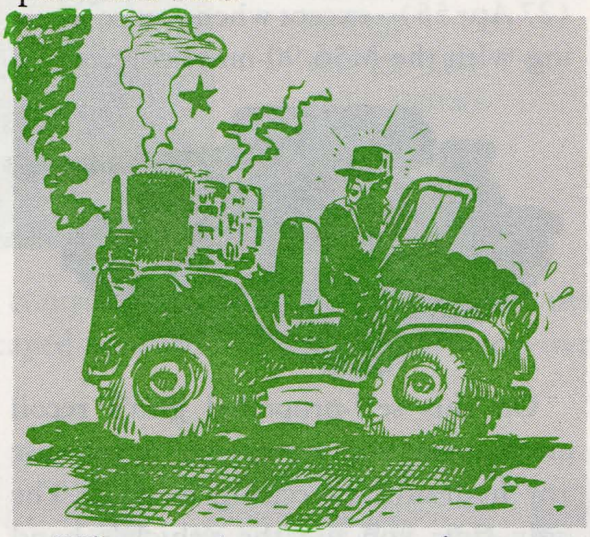
Off—then on

Switch off.

That's the way it has to be for the electrical accessories powered by your vehicle...or your generator. You want all your accessories turned off when you turn the power source on. It's easier on your batteries and your accessories.

Whether you're operating a radio in your truck . . . using a circular saw on a shop truck or some electronic equipment at a missile site . . . the equipment switches have got to be off when you turn on the power. If the equipment doesn't have an ON-OFF switch, then you want to pull the plug before you start up the power source.

On aircraft especially, you run the risk of damaging accessories two ways —through surges and through operation on low voltages. Most aircraft accessories won't have plugs to pull, so make sure the switches are OFF. Check the —1 flight handbook procedure for your particular bird.

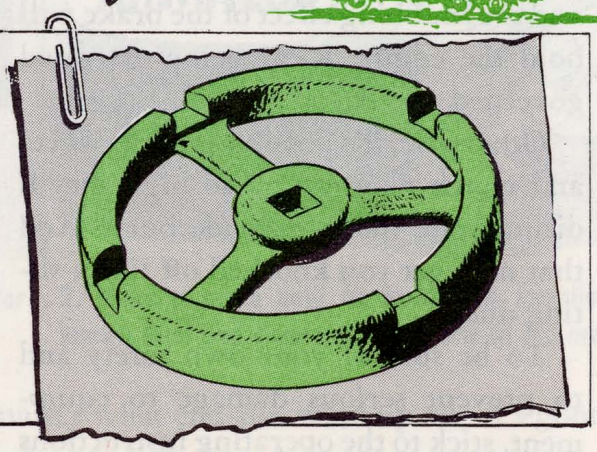


When starting up, a surge in current can burn out or damage your equipment —especially on vehicle-mounted rigs. Same goes when a guy with a heavy foot stomps on the gas pedal or gooses it unnecessarily—comes a surge, and if things are not right in your vehicle's circuits, the surge could slip through.

Either way, the result's the same: equipment no workee.

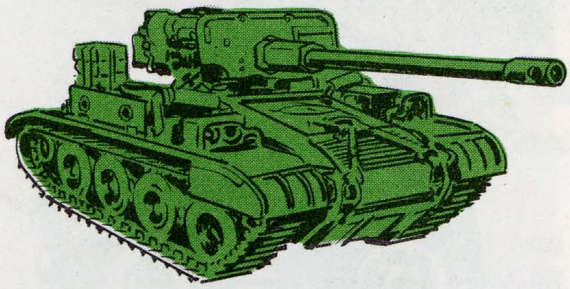
Deuce-and-a-half wrench

Some of you may be having trouble trying to decide which wrench you should use on the air compressor pulley of your 2½-ton G742-series trucks. If so, here's what you should ask for: Wrench, flange, ½-in sq-drive, 1 in thk, 7 in dia (air compressor pulley), FSN 5120-795-0404. And here's what it looks like:

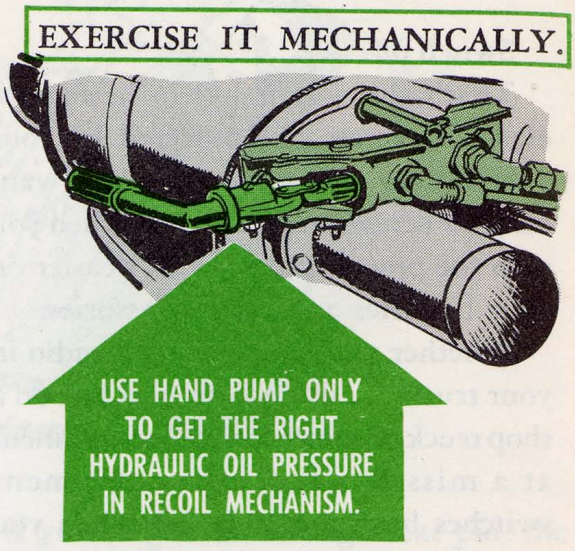


Exception to the rule

Sure! You know that most anytime you want to give a gun's recoil mechanism a little exercise you can do it hydraulically like it says in TB Ord 303 (27 Apr 55)—except when you're working with the M56 90-mm Scorpion.

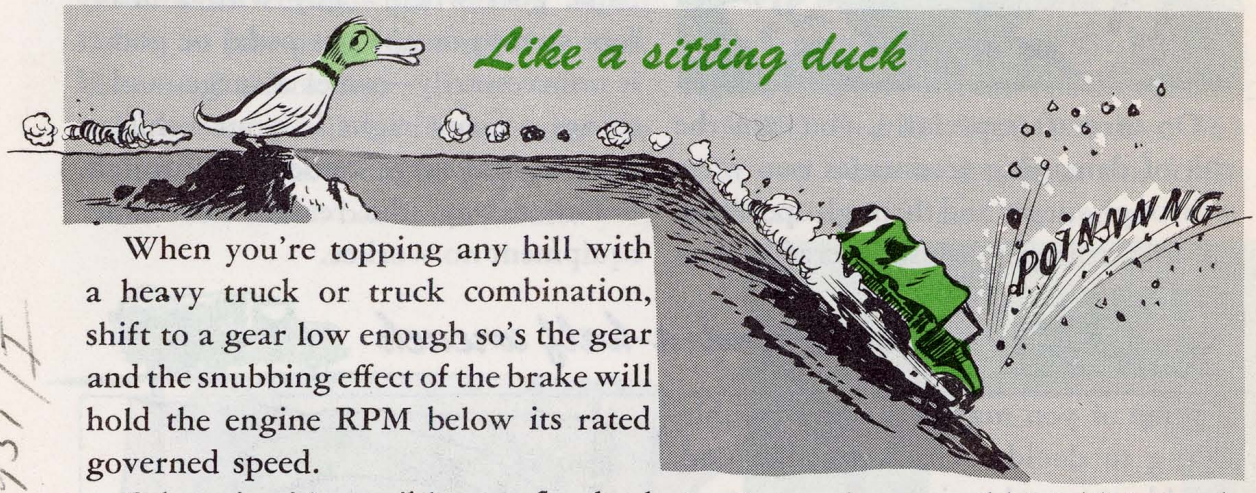


On this self-propelled gun's recoil mechanism you never—no never—use any hydraulic exercising method. The only time you use the vehicle's hand pump on this M88 gun mount is to get the right hydraulic oil pressure in the recoil mechanism.



You're just asking for trouble if you exercise the SPAT'S recoil mechanism any other way. Use the mechanical method shown in TB Ord 303 or that outlined on page 249 of TM 9-2350-213-20 (Jun 58).

Like a sitting duck



When you're topping any hill with a heavy truck or truck combination, shift to a gear low enough so's the gear and the snubbing effect of the brake will hold the engine RPM below its rated governed speed.

Otherwise, it's possible your flywheel and clutch may rev up so high they'll disintegrate like a grenade burst. And that may get you knocked off like a sitting duck.

To be sure of your own safety and to prevent serious damage to equipment, stick to the operating instructions you've got in your vehicle's TM. For the M123, f'rinstance, that's TM 9-8002 (1 Nov 55) which gives its governed full load engine RPM as 2600 in para 100b.

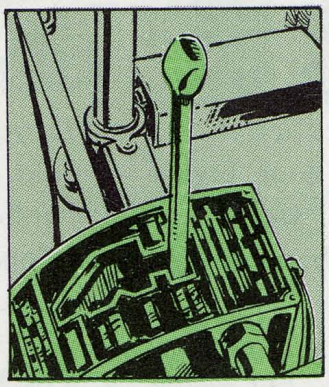
Also pay sharp heed to road speeds on the instruction plate like you see pictured in Fig 5 of the TM for the M123 for example.

M5-4951/I

Asking for trouble

It happened the other day. Two M42 twin 40's facing each other in the shop bay were having their transmissions checked.

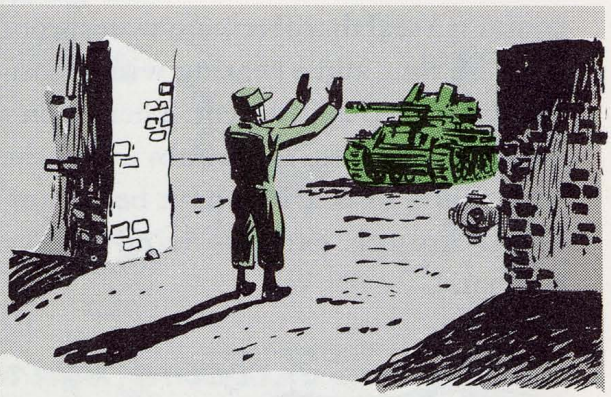
One vehicle's engine was running at 1200 RPM in NEUTRAL. The mechanic walked 'round to the front of the vehicle, reached in and put the range selector control lever in LOW RANGE. The next thing that happened was the vehicle leaped forward and one human being went to meet his ancestors.



DON'T LET ANYONE TOUCH THE RANGE SELECTOR CONTROL LEVER WHILE ANOTHER PERSON IS NEAR THE VEHICLE

So anyone with any sense a'tall:

1. Always have another person working with him and in the driver's seat if the engine is going to be turned on or the brakes taken off.



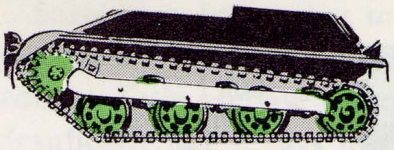
2. Use a ground guide in close quarters like a shop or storage area.

1. Let anyone play around with the range selector while there's another person near the vehicle.

2. Make a move until he makes his intentions known loud and clear to anyone else in the area.

'Cause in a situation like this—no matter what end you wind up on—it's gonna **cost you.**

Less work



After every fording operation there's many a job needs to be done before restin' those weary bones. Here's one on your M50 SP Rifle that you can knock off the list.

On Page 129, par 109 b (3), and page 523, par 330 d, of TM 9-7222 you're reminded to "remove the roadwheels and clean and lube the bearings, after each submersion."

In the 50's the wheel hub assembly contains a seal that'll remain waterproof for a lifetime and a bearing with a positive preloaded adjustment. There won't be any leakin' into those hubs unless the seals, hubs, or bearings have been damaged through careless handling or combat.

If your CO still feels the wheels should get a going over, he can make the following checks which have been developed:

1. A look-see if the lube level has risen in the hubs after each fording.
2. If the level has appeared to rise, pull the hub cap and check for the presence of water.
3. If water has snuck into the hub, then disassemble the bearings, clean and lube them.

If the water's been in the hubs for any length of time, it takes on a grey-sorta sheen and tends to thicken up. This would indicate the hubs, seals or bearings had been bad before fording was made.

For more info on fording, TM 9-2853 will come in real handy. Check through it next time your vehicle takes a swim.

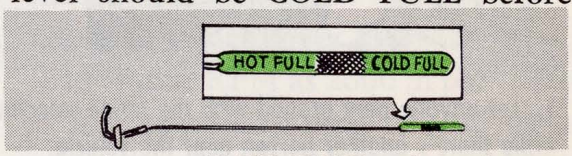
Keeping hydra-matics happy

If your job is trying to keep a Hydra-Matic happy in a G749-series 2½-ton truck, you've got to gage 'er right, hot or cold. Give 'er the oil she needs, but enough's enough.

Extra oil will cause the spinning drums to foam the oil. And so much air may get mixed in that the oil will heat up and foam like the head on a brew. Then, pretty soon you'll get uneven operation of the automatic shift . . . and oil leakage.

So, lay a sharp eye on para 194 of TM 9-8024 (3 Oct 55), especially Fig. 187. Read on, though, 'cause latest instructions on checking and filling are in Note 6 to LO 9-2320-210-10 (19 Jan 59).

With handbrake set, transmission in NEUTRAL, and engine idling (375 RPM) for three to five minutes, the oil level should be COLD FULL before

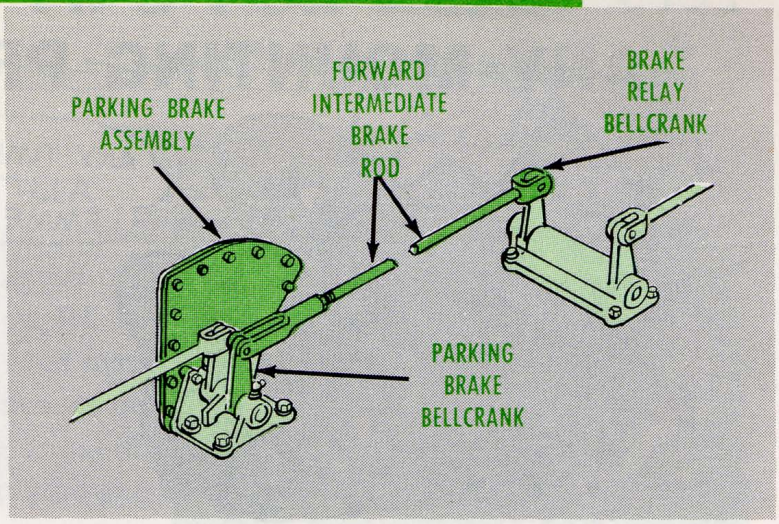


operation or HOT FULL when the engine has been running and is at operating temperature (after operation).

END FOR END IT

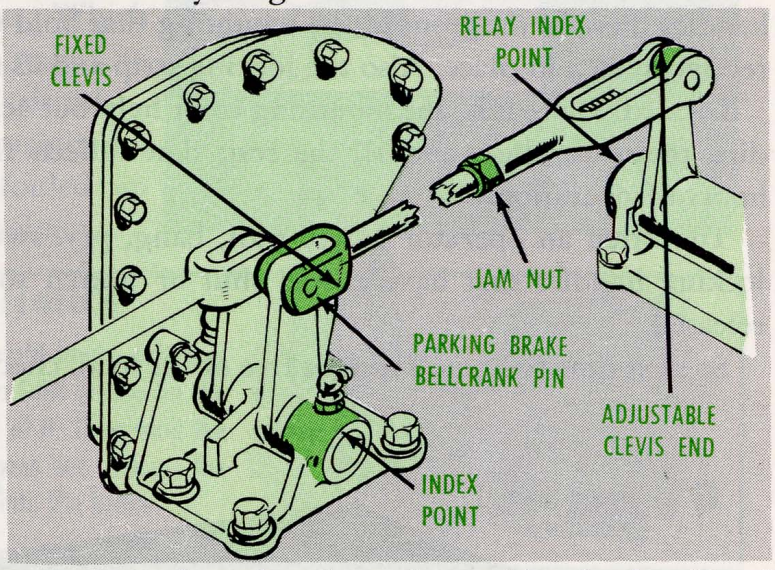
You M42 drivers who've been finding your parking brake control rod in a bind can find relief by turning it end-for-end.

It seems that as originally installed the forward intermediate brake rod can bind on the parking brake bellcrank, and also may hit the personnel heater duct.



But if you take it out and reverse it, so that the fixed clevis is installed on the parking brake bellcrank, while the adjustable clevis goes up to the brake relay bellcrank, you'll find it clears everything OK.

The first thing you want to do in making this change is to line up the little index holes in the parking brake base and bellcrank and those in the relay base and relay bellcrank and shove ⅛-in drill rod index pins into 'em to keep the bellcranks in proper position. (In a pinch, a seven-penny nail —.112-in dia. will do.)



Now you remove the cotter pin and washer from the parking brake side of the parking brake bellcrank pin and take the pin out. You've got to take it out on the side away from the parking brake housing. It won't go the other way.

Next, take out the cotter pin and the clevis pin from the brake relay bellcrank.

Then turn the rod around and install the fixed clevis end at the parking brake, replacing the clevis pin, the washer and the cotter pin.

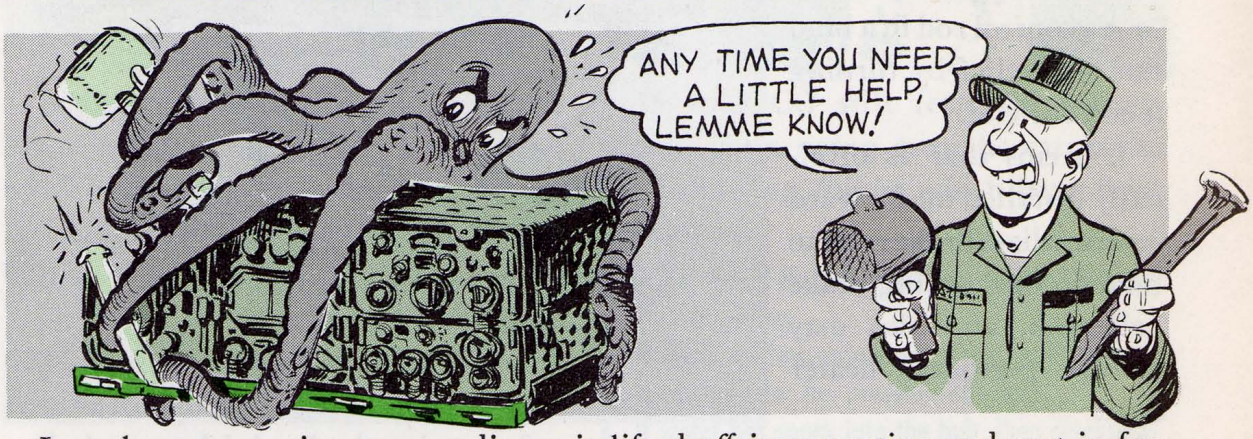
If this rod was adjusted right before, you won't have to change it. If not, you adjust it so that the adjustable clevis pin'll slip into the brake relay bellcrank without forcing.

Replace the clevis pin, washer and cotter pin in this end, and lock the clevis adjusting jam nut if you had to loosen it.

Take out your index pins and try your brakes. You're back in business.

LET'S COMMUNICATE

ANY MOUNTING PROBLEMS?



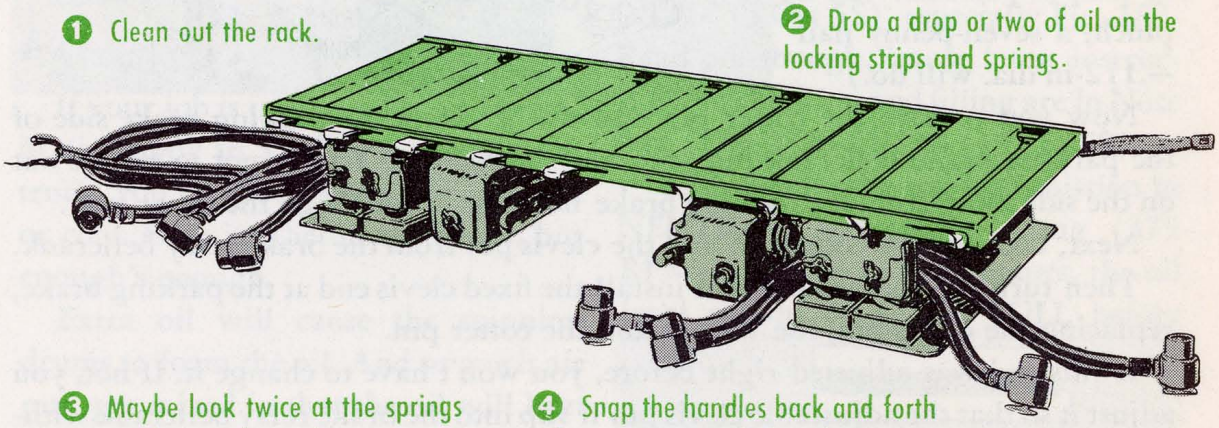
Just about every time your radio set is lifted off its mounting and sent in for repair—or whatever—is a good time to check its mounting.

Actually, you only have to check one or two movable parts. The locking handles there in the front of the mounting that hold the transmitters, amplifiers, receivers, etc., in place. Also the locking strip and its spring.

Located where it is, the mounting can't help but act as a catch basin for all the dirt, moisture, dust, and all the rest, that collects from many miles and many hours of operation.

Too often an operator has to pull, bang, pry, sweat and grunt to loosen the locking handles that have rusted shut or gotten so clogged they couldn't be released.

So next time your mounting is free of its load, check the moving parts.



❶ Clean out the rack.

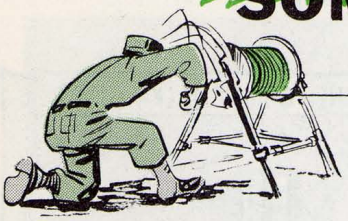
❷ Drop a drop or two of oil on the locking strips and springs.

❸ Maybe look twice at the springs to see what condition they're in.

❹ Snap the handles back and forth a few times to work the oil in.

Handles that lock and unlock with an easy touch means that you can slip your set out pronto—and lock it back into position firmly and without sweat.

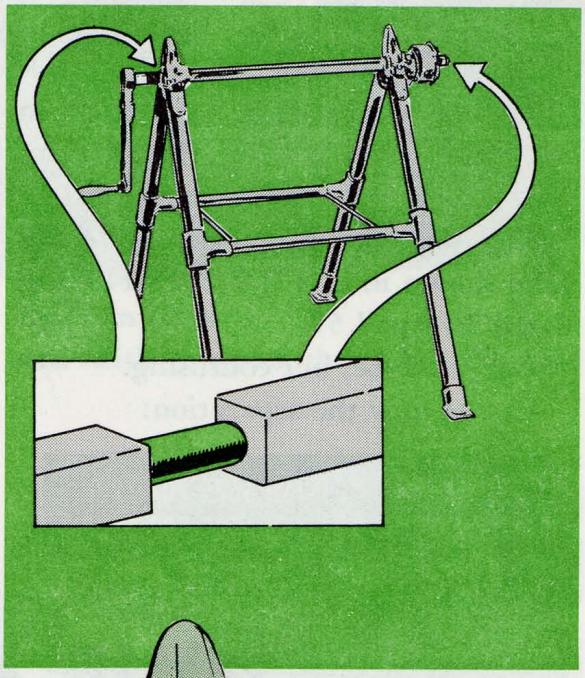
SOME TIPS FOR REEL



Talk all you want about atomic power and such. There're no push buttons around to help drive those RL-31-series(*) reel units. Nothin' but manpower and sweat. When the time comes to pay out some wire—or reel it in—it's the guy with the strong arm who gets results.

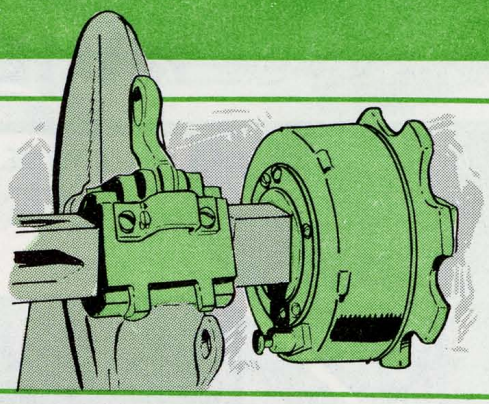
Nice thing about those RL-31's, though, is the fact that there are only two main points of friction. Which means two key lubrication points to keep an eye on. But they are critical.

Because if the axle shaft bearings are rusty, grimy or generally fouled up with dirt, you'll have reel trouble.



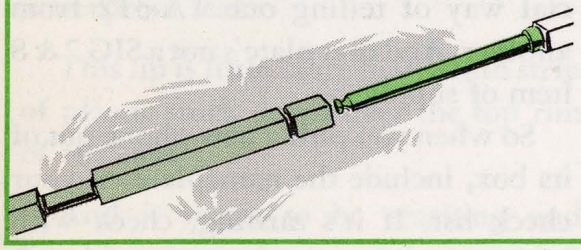
8-HOUR MAINTENANCE

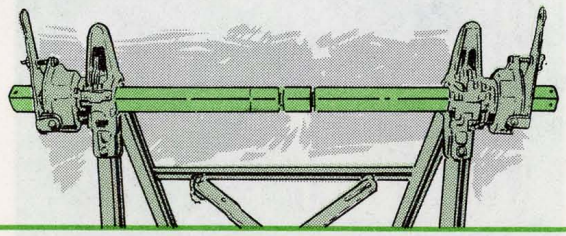
Snap open the bearing caps every eight hours—which is just about every day—and rub some GAA grease on the bearing surfaces. Generously, plenty of it. Then snap the caps shut and wipe off whatever oozes out. Always the risk of extra grease finding its way into the brake.



40-HOUR MAINTENANCE

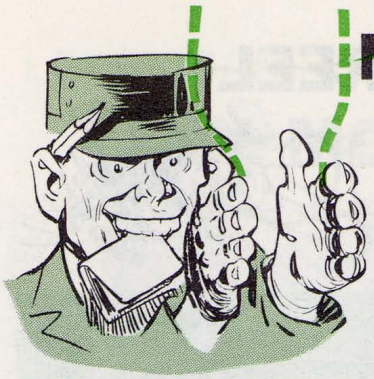
Once a week (or every 40 hours as the TM says) slip the whole axle off and give it a bath in some cleaning compound. And while you're making with the lubrication, why not walk around the reel unit with an oil can and drop some oil on such spots as the frame hinges, pin catches, the bearing latch hinges, the bearing cap hinges and the crank handle catch.

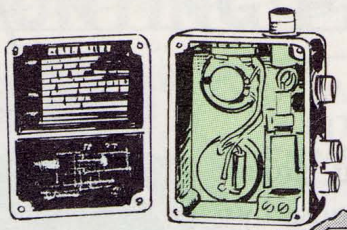


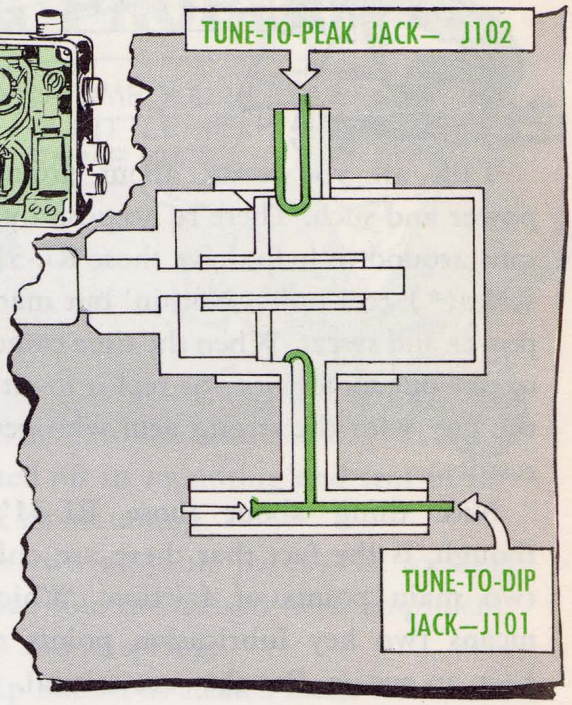


A little grease and a little oil at the right time and place will keep your unit ready to pay out or reel in when there's time for just one thing: Action!

NEW NUMBER







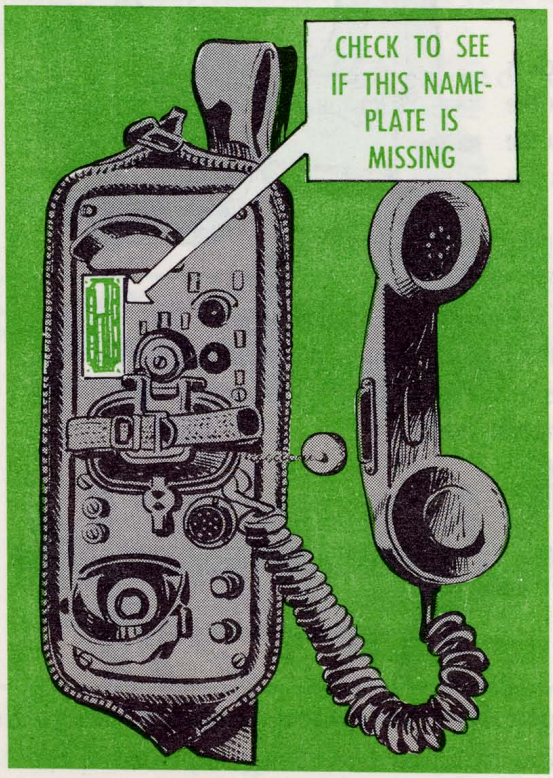
Up to now, the J-101 and J-102 Connectors on your TS-117/GP Wavemeter Test Sets were sharing the same Federal Stock Number: FSN 6625-330-9680. Like shown in SIG 7 & 8 TS-117/GP, dated 26 April 57.

Cozy, maybe, but confusing.

Comes now the separation:

CONNECTOR J-101; FSN 6625-707-1276
CONNECTOR J-102; FSN 6625-330-9680

NAME, PLEASE?



Been some brand new TA-312 field telephones coming to their units without a nameplate. Sure, they'll get a message through just fine without a nameplate, but complications can set in later on.

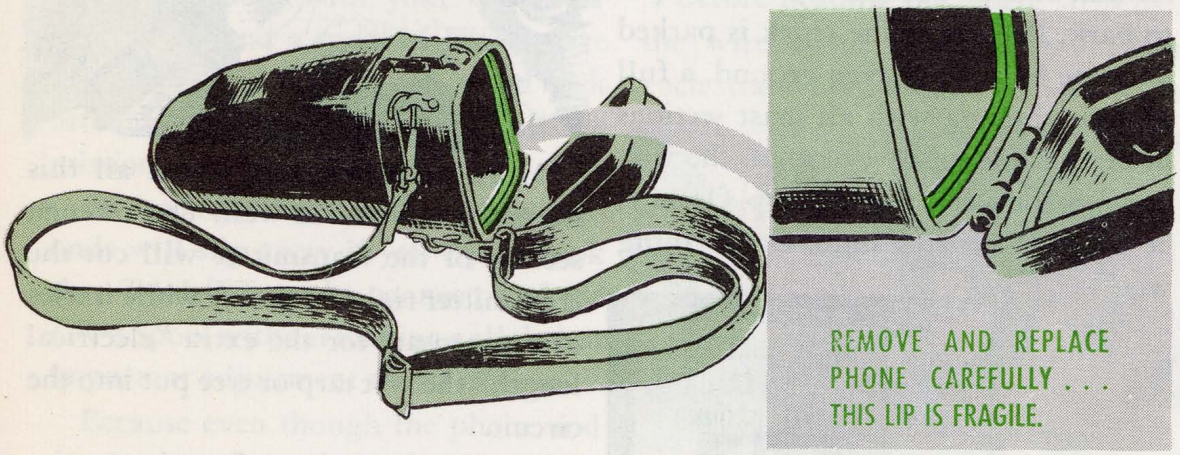
F'rinstance, the nameplate gives you the serial number of the phone—which is vital comes time for turn-in for repair. That serial number also is the only official way of telling one TA-312 from another. And that plate's not a SIG 7 & 8 item of supply.

So when you pull a new phone out of its box, include the nameplate on your check list. If it's missing, check with higher headquarters before accepting responsibility.

POOR LIP SERVICE

No need for any operator to take any lip from them.

From the semi-flexible **plastic** cases used with some of the TA-1/PT field telephones.



T'seems they've been giving some lip to the gents who use the telephone and its case. The trouble rests with that lip around the upper rim of the case—where the hinged cover closes down to make a waterproof seal.

This lip is little more than a thin strip of plastic stuck down over the top rim of the case.

And it seems to be cracking and breaking loose from routine opening and closing of the case. Just removing and replacing the phone is enough to loosen the lip.

Until a newer, rigid, stronger case comes down the line, sort of pay some lip service to the one now in use. Slide the TA-1 in and out extra carefully. And if the lip does start to pout, the case still has many moons of use still left in it. Unless, of course, you plan to do some underwater swimming with it or get caught in a nineteen-hour downpour.

Still, if the case gives you all of its lip, turn it in for a new one.

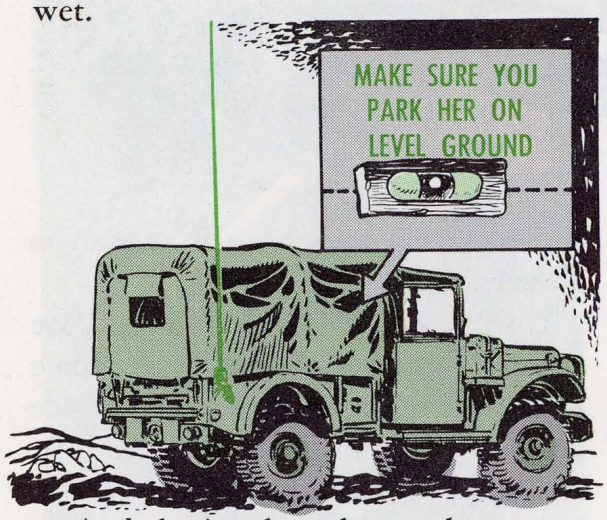
BIG BITE

When a wet tarp and a wet antenna get together, they'll put the bite on you just about as fast as electricity can travel. Real rapid.

And it's a bite that hurts, injures, and has been known to swing the pearly gates.

So bear one or three things in mind whenever you're in the vicinity of automatic antenna loading equipment . . . like the AN/GRC-19 mounted in a ¾-ton truck. F'rinstance:

When the time comes to pull off the road, a good driver will take some extra seconds to look around for a level spot to park. Because if the truck is parked on some bumpy, uneven ground, a full 15-foot antenna with all mast sections in place could easily droop all the way down to the wet top of the tarp. Or maybe touch a wet tree limb. Or anything wet.



And that's when the sparks start to fly. Because a wet tarp or limb, or what have you, becomes an electrical conductor and can give a nasty "bite" to anybody who touches either tarp or vehicle.

More problems, too, 'cause all this hurts the radio set as well. The antenna section of the transmitter will cut the transmitter right off the air while it tries to compensate for the extra "electrical length" the wet tarp or tree put into the circuit.

That kind of automatic tuning equipment can do almost anything by itself—except carry an extra load and still put out. As a matter of fact, sets **without** automatic tuning are in trouble, too.

They'll keep trying to put out, but without much luck. They just can't load up an antenna plus a wet tarp or tree. And a set will chug away long and hard—yet next to nothing will get out into the air.

Sort of keep an eye peeled, then, for wet things and droopy antennas—and in that way keep them from bitin'.

TIMELY TAIL TALE

This is a timely tale about a tail that makes a big difference by being at the right place at the right time.

Like if you're up forward spotting for some artillery or mortar fire. You hustle up there with your TA-1/PT field phone and a spool of WD-1 wire . . . make a quick hookup . . . and stick around only long enough to pull the mission.

So seconds count. And precious seconds will slip away if you try to hook that TA-1/PT to the connector of the DR-8 Spool without making a slight but important adjustment ahead of time.

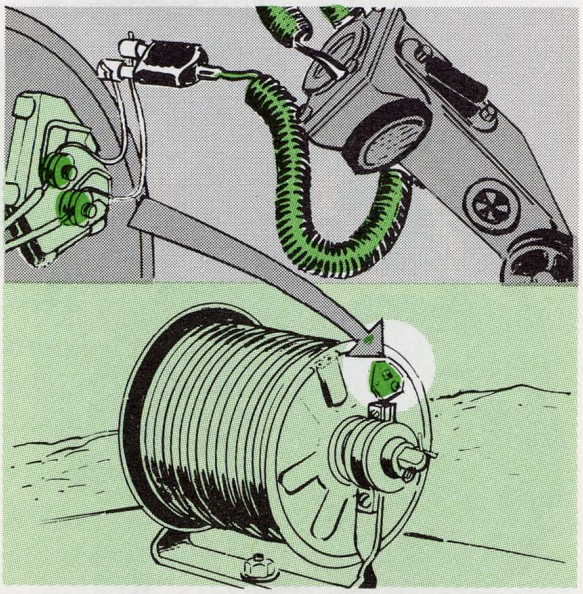
Because even though the phone and spool are used together, trouble crackles when you try to get 'em together. The binding posts on the telephone just won't connect with the posts on the M-221 connector.

The connector was made for alligator-type clamps. But the phone's binding posts don't bind that way. They can't bite on the connector, but instead need a stripped wire to bite.

Sooooo, make one small adjustment on the connector before heading out. Instead of terminating the WD-1 wire directly at the two posts of the M-221 connector, wrap it around the posts once and then leave about a 2-inch "tail" on it.

And that tail will be just right for the binding post to bite on!

Before heading out, then, strip back the wire about three inches . . . wrap each strand once around its post . . . and



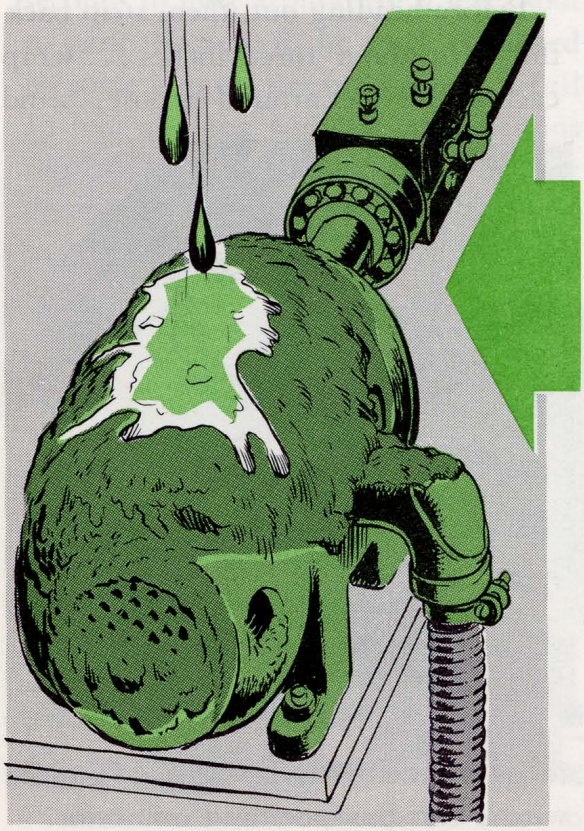
then tuck the two tails under the lead-in wire 'twixt the spool and connector.

That'll keep your tail in line until the time comes to tap in, and spare you the sweat of stripping wire and messing around with pliers at a time when time means lives.

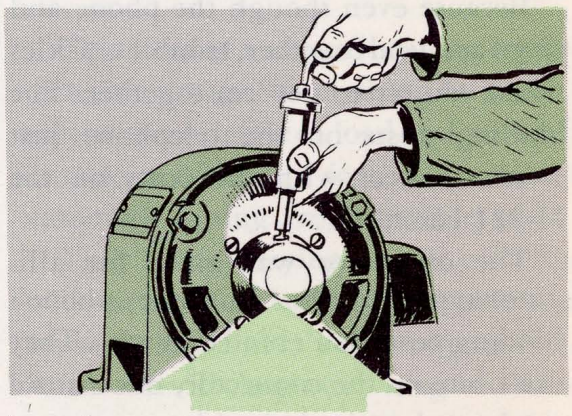
ELECTRIC

One look at the Army's locomotives, watercraft, aircraft, some special rolling stock and material handling equipment, etc., will show you that the modern Army lives just as electrically as the modern housewife. Our good friend, the kilowatt, is wearing fatigues these days —and in a big way.

It's sure nice to have all these electric motors doing the muscle work for you—but it's up to you to give these motors every chance to do their job.



Which, of course, means that you make sure they are kept clean and dry, being sure nothing is dripping on 'em, dirt isn't piling up, and particularly that nothing louses up the ventilation around 'em. And it's only common sense to be sure that no tools or other objects have a chance to get into the moving parts and jam things up.



Check your LO for the proper lubrication of your motors, and remember that overlubrication can be just as bad as underlubrication, particularly if you get oil or grease on a commutator or the brushes.

Also, you're the one who has to know what load your power tool is intended to handle and see that it isn't overloaded.

ELECTRIC MUSCLES

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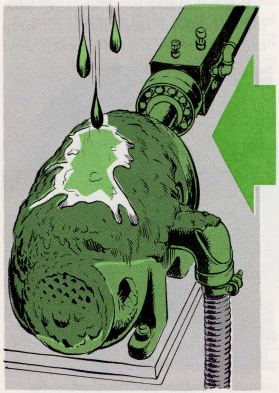

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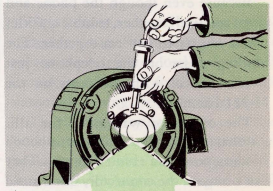

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Now, there is a fact about electric motors that not everybody really appreciates. When a motor's spinning, the armature is carrying its coils through the magnetic flux of the field coils, just like the armature of a generator. And there is actually a voltage generated in this armature. This voltage is bucking the driving current, and the faster the motor turns, the more bucking voltage you have. This is called "counter-electromotive-force" or just "CEMF."

So here's the pitch: When a motor is designed, this CEMF is figured in, and the size and number of coils in the armature is determined by allowing for it, as well as by calculating the resistance of the coils themselves. OK, the only place this concerns you is that when the motor is turning **slower** than its intended speed, there is less counter EMF, and the armature draws **more** current.

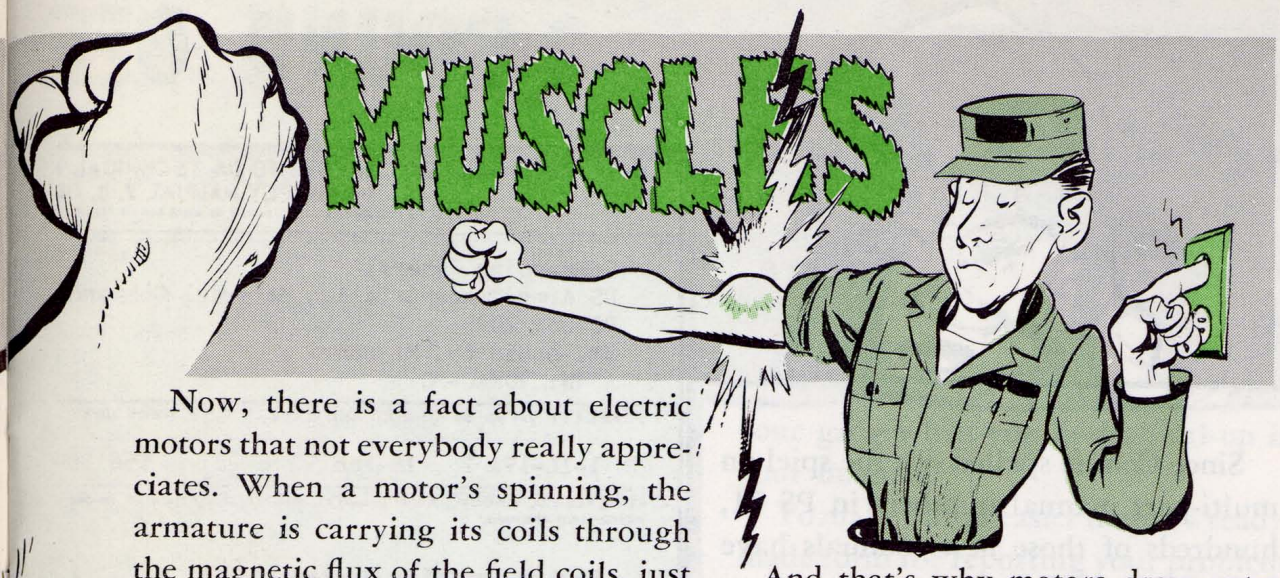
And that's why motors draw extra current when they start up, and why they get too hot if you start 'em under load too often. So you've got to either let 'em run a while or rest 'em a while between starts, so they can cool off.

And for exactly the same reason—lack of speed and lack of CEMF—if your leads are loose, or your connections are dirty, or if for any other reason your line voltage is low, your motor is likely to overheat.

So, naturally, if a motor **is** running too hot, one of the first things you do is check the line voltage at the motor terminals, and then check back for loose or dirty connections.

But remember that lots of motors are **designed** to run with a 20° Centigrade rise in temperature, equal to a 36° Fahrenheit rise which is often too hot for your hand. (If you had a 80°F day, your motor would run at 116°F and be right on the designed temperature.) So be sure it really **is** overheating before you get all shook up about it.

So, that's it—you work for your motors and your motors' electric muscles will work for you.



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SOUND OFF

Since Connie spelled out the spiel on multi-part manual numbers in PS 71, hundreds of those new manuals have been rolling off the presses.

Now the people who work up your manuals aim to make 'em perfect for your purposes. But nobody hits a home run every time at bat.

This is why they put their mailing address in every manual under the heading "Errors, Comments, Suggestions."

They invite all you operators, mechanics and supervisors to sound off every time you see something in your manuals that needs to be corrected, changed or improved.

So don't just sit there growling into

RECOMMENDED CHANGES TO DA TECHNICAL I
OR SUPPLY MANUAL 7, 8, OF
(Forward in duplicate to addressee listed

TO:
Commanding General
US Army Transportation Materiel Command
PO Box 209
St. Louis 66, Missouri
ATTN: TCMAC-MC

1. COMPLETE TM OR SM NUMBER AND DATE	2. PAGE NOS.
TM 1-1L-19A-2 14 Feb 57	156

4. FUNCTIONAL GROUP *(Enter group(s), number(s), or title(s), under which item appears)*

Engine Ignition System

5. ACTION REC

CHECK ONE		a. STOCK NO.	b. ALLOWAN FACTO
ADD [1]		FROM	FROM
DELETE [2]		TO	TO
CHANGE [3]			

6. IDENTIFICATION

a. STOCK NO. *(FSC or Technical Svc) (if available);* OTHERWISE LIST MFGR'S NAME AND PART NUMBER	b. BRIEF DE

7. DEMANDS FOR ITEM *(Exact quantity of demands for item in each specific block for the number of days indicated)*

a. 30 DAYS	b. 90 DAYS	c. 180 DAYS

9. JUSTIFICATION, REMARKS OR OTHER RECOMMENDATIONS *(Brief mendations not covered, such as errors on illustrations, changes to ma for changes to maintenance allocation charts)*

Section V, paragraph 105-m specifies

Suggest it be corrected

TYPED NAME, GRADE OR TITLE

F. LIGHT, CAPT., Maint. Off.

[1] *Complete Items 5b and c, 6, 7, 8, & 9.*
[2] *Complete Items 6, 7, 8, & 9.*
[3] *Complete Items 5a, b, or c, as applicable, and 6, 7, 8, & 9.*

DA FORM 1 SEP 57 2028

SOUND OFF ON DA 2028

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9. JUSTIFICATION, REMARKS OR OTHER RECOMMENDATIONS *(Brief mendations not covered, such as errors on illustrations, changes to ma for changes to maintenance allocation charts)*

Section V, paragraph 105-m specifies a breaker gap setting of .0015 inch.

Suggest it be corrected to read .015 inch.

TYPED NAME, GRADE OR TITLE
F. LIGHT, CAPT., Maint. Off.

[1] Complete Items 5b and c, 6, 7, 8, & 9.
[2] Complete Items 6, 7, 8, & 9.
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DA FORM 1 SEP 57 2028

MANUAL PARTS LISTS
9
(in manual)

DATE
8 Jan 60

FROM: *(Activity and location)*
99th Aviation Co
Avon By The Sea
APO

3. EQUIPMENT

a. END ITEM STOCK NUMBER
L 19A and E Aircraft

b. BRIEF DESCRIPTION
Breaker Point Gap Setting, Magneto

COMMENDED

ICE	c. SOURCE, MAINTENANCE, AND RECOVERABILITY CODE *(Where applicable)*
	FROM
	TO

OF REPAIR PART

SCRIPTION

8. TOTAL NUMBER OF MAJOR ITEMS SUPPORTED TO WHICH ITEM APPLIES

and concise justification for recommended action. Any remarks or recom- intenance operations covered in technical manuals and recommendations

SIGNATURE
F. Light

U. S. GOVERNMENT PRINTING OFFICE 1957 O—439967

your grog when you find a foul-up in your manual.

To make things easier there's a ready-made form for reporting your problem. It's DA Form 2028 (1 Sep 57), authorized for distribution to all units by DA Circular 310-16 (2 Oct 57).

And don't let the DA 2028 heading throw you—reports on operation and service manuals can be covered in Block 9, like it explains in fine print.

All you have to do is write up your DA 2028 in duplicate, filling all the blocks and furnishing all the numbers you need to describe your problem—and the answer, if you have it.

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ON DA 2028

MANUAL PARTS LISTS R 9 (In manual)	DATE 8 Jan 60

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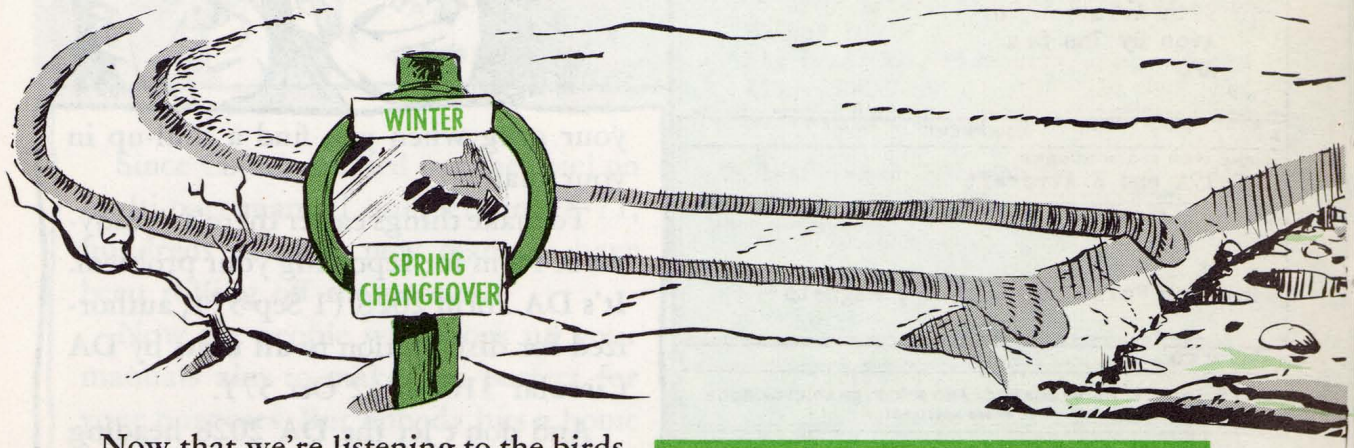
UNFREEZE YOUR



Now that we're listening to the birds in the budding trees, here's an unfreeze reminder:

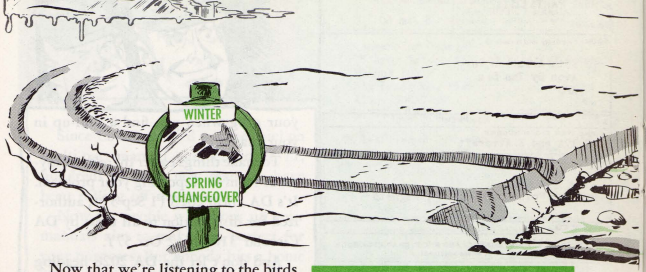
DON'T KEEP ANTIFREEZE IN YOUR VEHICLES, ENGINEER RIGS AND QUARTERMASTER STUFF DURING THE WARM WEATHER SEASON.

As the first step in this new scheme . . . get yourself a pencil with a big, black point and scratch this sentence from your vehicle's antifreeze radiator tag, which is on or near the filler neck: "Drain and save old solution after one winter's use." Just not so anymore.

WHEN YOU DRAIN THE ANTIFREEZE OUT OF YOUR VEHICLE THIS SPRING YOU CAN LET IT RUN DOWN THE DRAIN. THE ONLY EXCEPTIONS ARE "COMBAT-READY" VEHICLES — WHICH SHOULDN'T HAVE THEIR COOLING SYSTEMS DRAINED UNTIL THERE'S A FRESH SUPPLY OF ANTIFREEZE ON HAND TO GIVE PROTECTION TO 55° BELOW ZERO (F.).

Remember, this only applies to operating vehicles. It does not apply to vehicles in storage.

UNFREEZE YOUR ANTI-FREEZE



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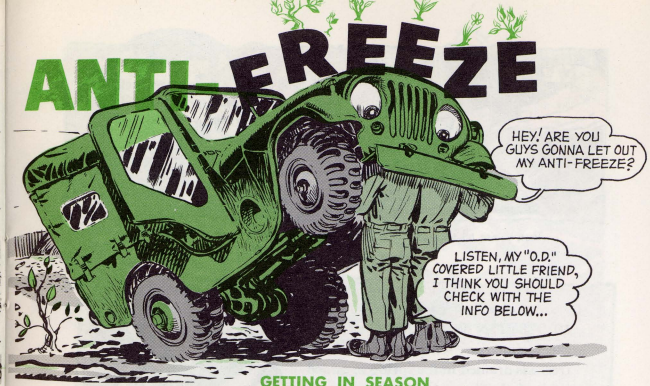
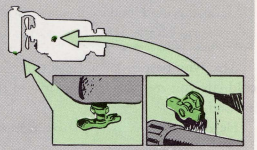
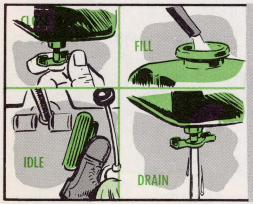


GETTING IN SEASON

When the temperature starts up and it's time to slither out of those longjohns, start thinking about getting rid of your antifreeze. Here's what you might do:

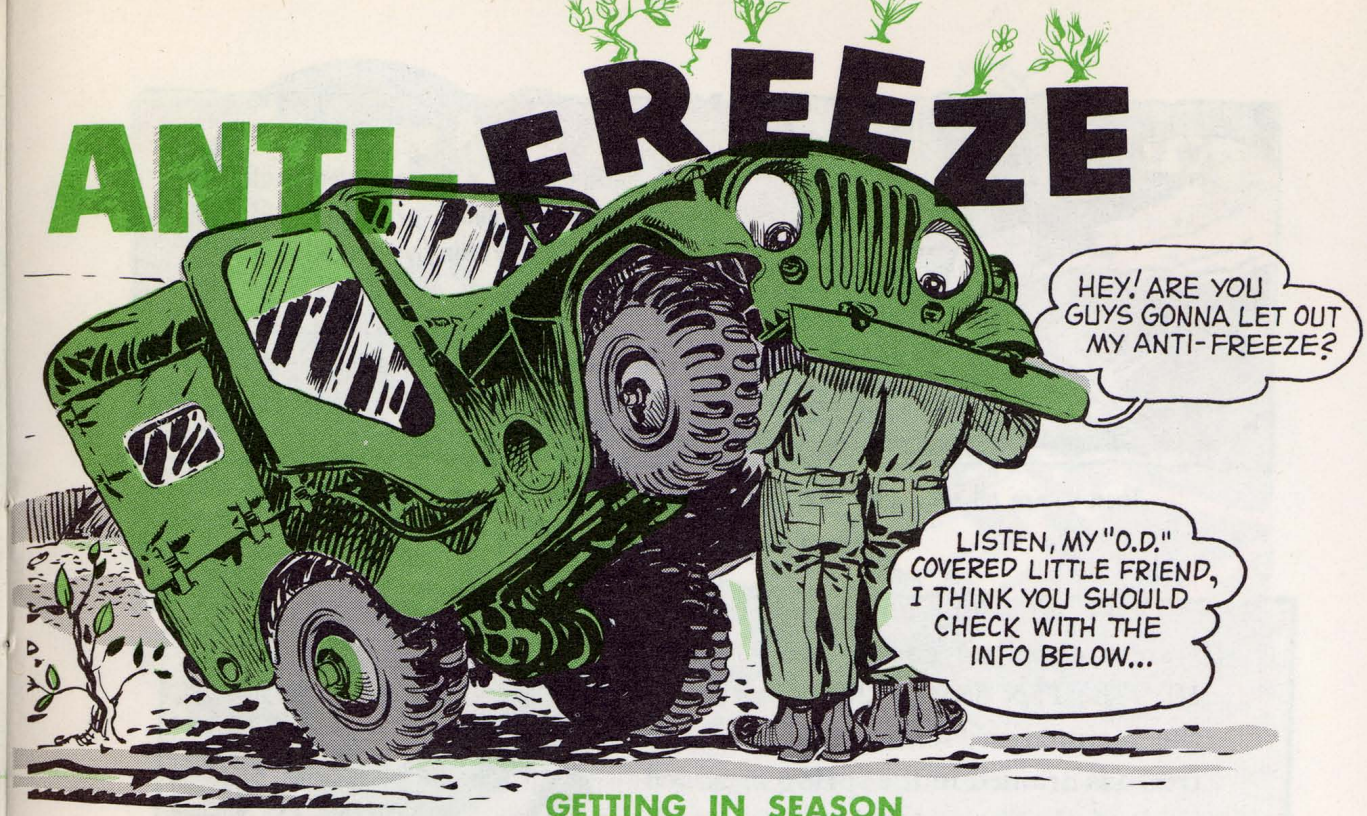
1. Drain the antifreeze from the cooling system by opening the radiator drain cocks and engine-block drains. (Remember now, you don't do this on "combat ready" vehicles unless you have a fresh supply of antifreeze on hand.)





2. It isn't a smart idea to use a hose to flush out the radiator—whether or not the engine is running. Cold water closes the thermostat and stops the water from circulating. To do a real job, close the radiator's drain cock and fill 'er with clean, fresh water. Cap it, then run the engine at fast idle for at least five minutes. Okay, now drain. If the water's dirty—repeat this over and over again until the water comes out clean. Then, close the drain plug.

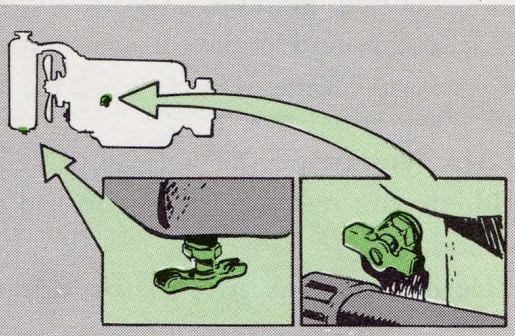
ANTI-FREEZE

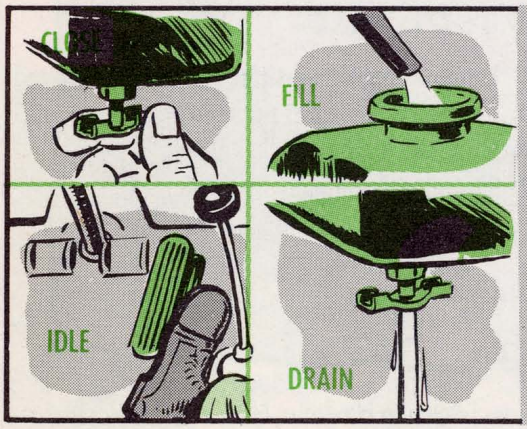


GETTING IN SEASON

When the temperature starts up and it's time to slither out of those longjohns, start thinking about getting rid of your antifreeze. Here's what you might do:

1. Drain the antifreeze from the cooling system by opening the radiator drain cocks and engine-block drains. (Remember now, you don't do this on "combat ready" vehicles unless you have a fresh supply of antifreeze on hand.)





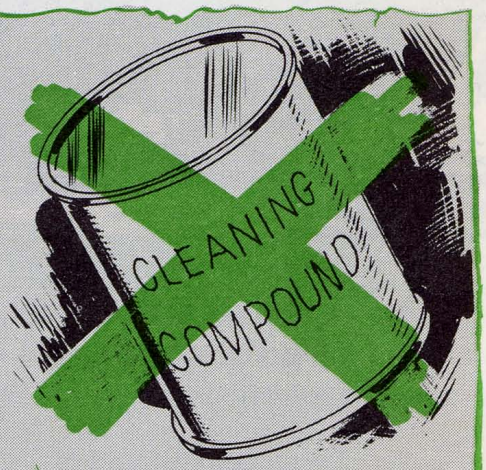
2. It isn't a smart idea to use a hose to flush out the radiator—whether or not the engine is running. Cold water closes the thermostat and stops the water from circulating. To do a real job, close the radiator's drain cock and fill 'er with clean, fresh water. Cap it, then run the engine at fast idle for at least five minutes. Okay, now drain. If the water's dirty—repeat this over and over again until the water comes out clean. Then, close the drain plug.

3. Refill radiator with fresh, clean water and add corrosion inhibitor, FSN 6850-281-1989 (Spec O-I-490). Put in five ounces of inhibitor for each 10 quarts of water. The inhibitor should be dissolved in warm water and poured into the radiator while the engine is idling.

Then you're all set . . . till next winter when you put in fresh antifreeze.

HELPFUL HINTS

Don't go using an engine cooling system cleaning compound (Mil-C-10597B) FSN 6850-272-9327 as a routine maintenance service when the antifreeze is drained in the spring or added in the fall. These cleaning compounds are to be used **only** when you've got to work on clogged radiators or rusted cooling systems. 'Cause the cleaning compound makes it easier for rust to form on metal surfaces.



Also, you best order your antifreeze now and not wait for the fall when it gets cold—or you may be left out in the cold. It's nice to know you've got the stuff around.

Here's the poop to order the kind of antifreeze you need:

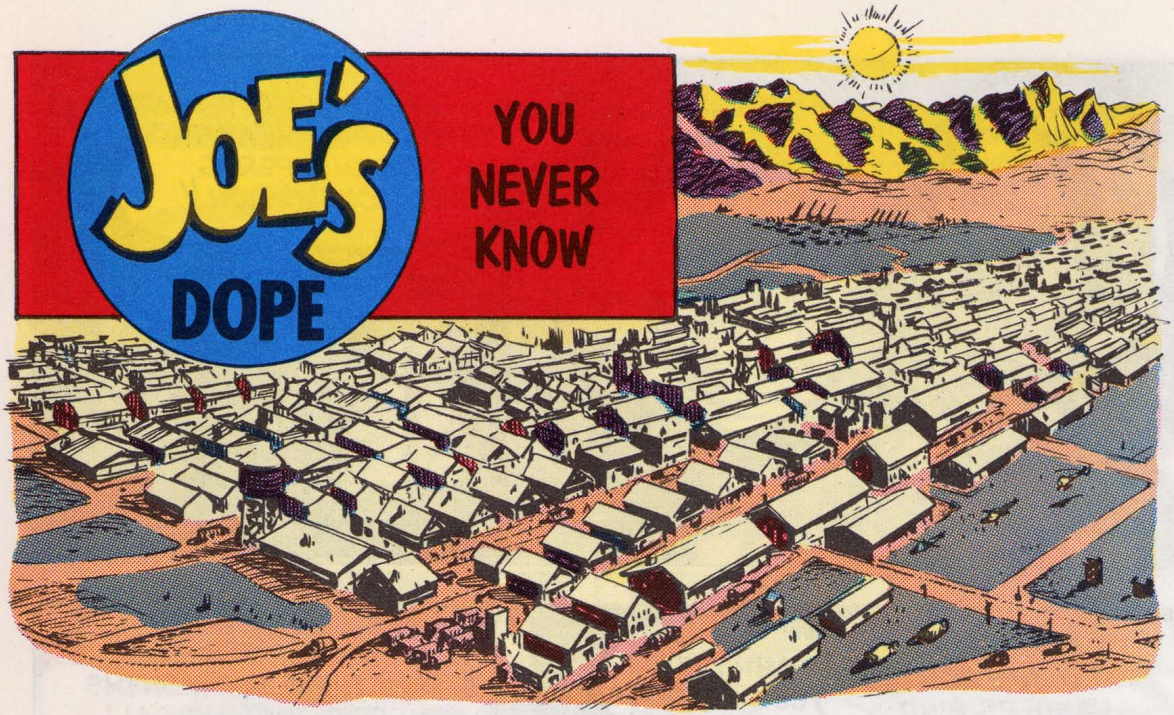
Ethylene-glycol antifreeze (Spec O-A-548a, type I, formerly O-E-771a, type I)—

FSN 6850-243-1992 = 1-gallon can, domestic packed.
FSN 6850-243-1993 = 1-gallon can, export packed.
FSN 6850-224-8730 = 5-gallon container.
FSN 6850-243-1990 = 55-gallon drum.

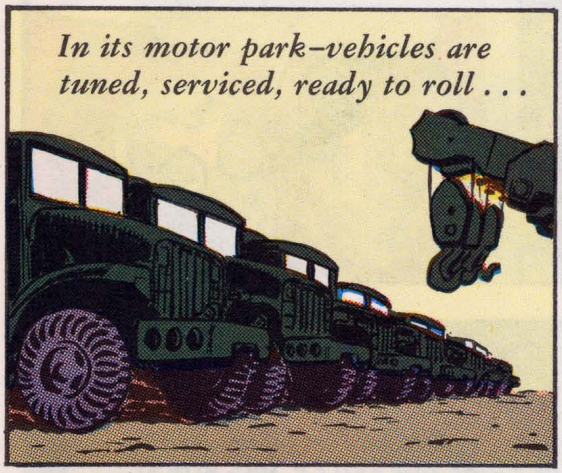
Arctic-grade antifreeze MIL-C-11755 (ORD)—

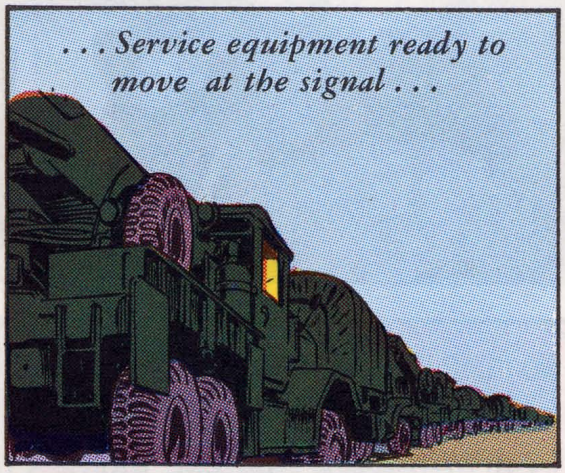
FSN 6850-174-1806 = 55-gallon drum.

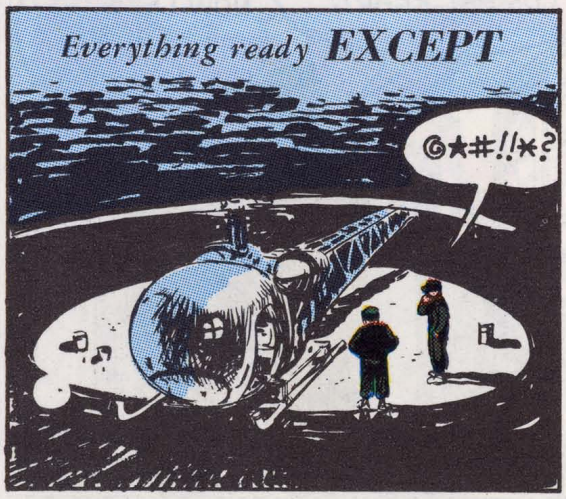
For the complete scoop on this phase of using antifreeze, take a look-see at TB ORD 651 (9 Oct 59).

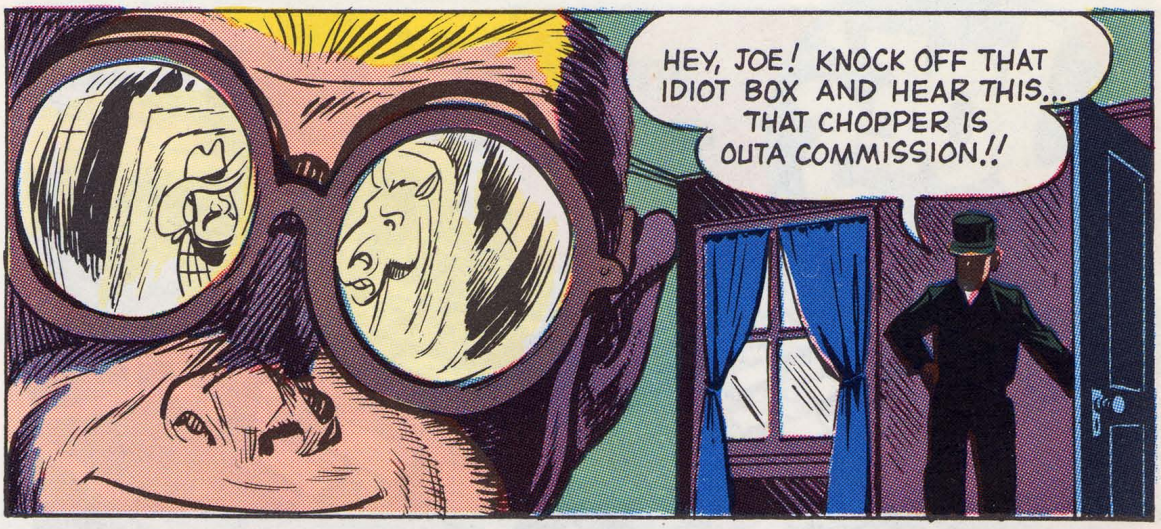


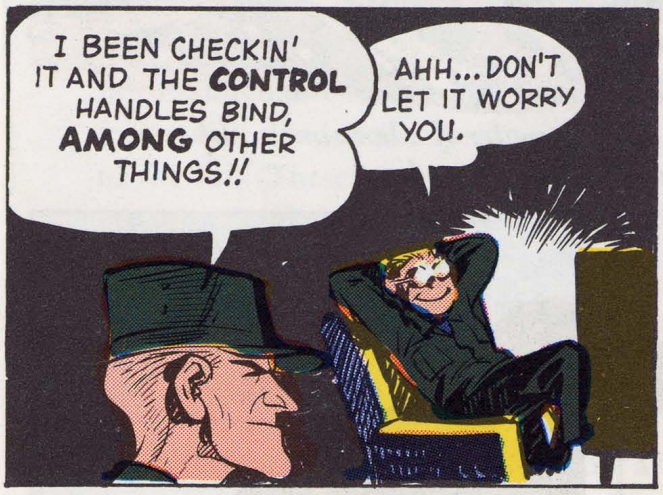
The installation lay shimmering under the hot sun . . . like a tiger poised and waiting at a lonely wadi.



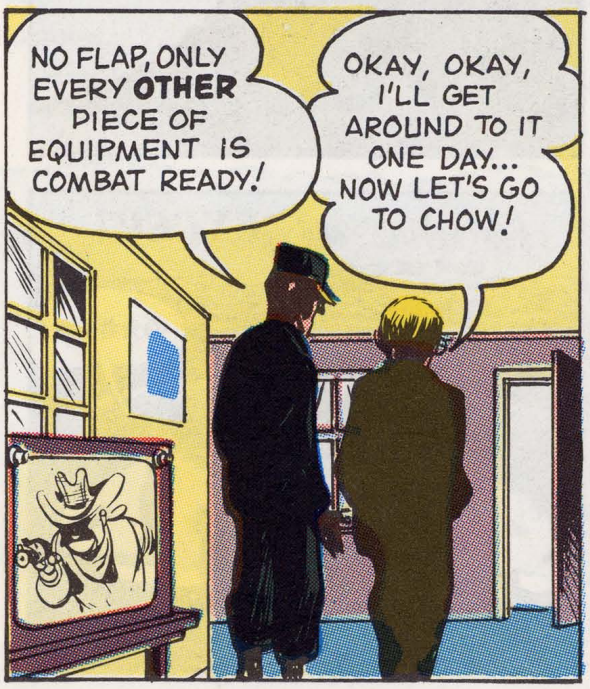


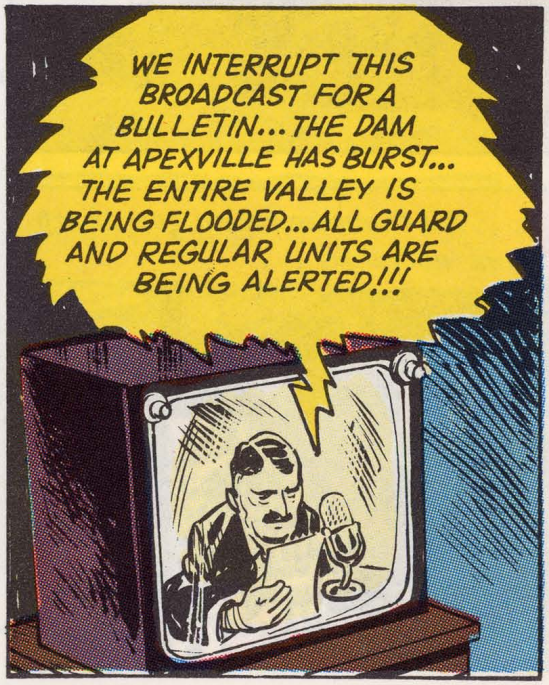


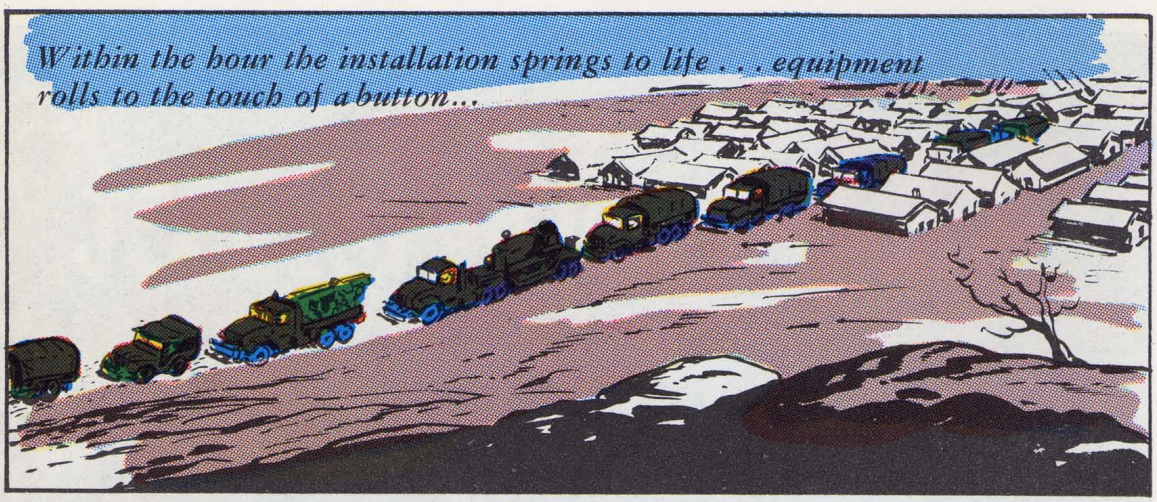

HEY, JOE! KNOCK OFF THAT IDIOT BOX AND HEAR THIS... THAT CHOPPER IS OUTA COMMISSION!!

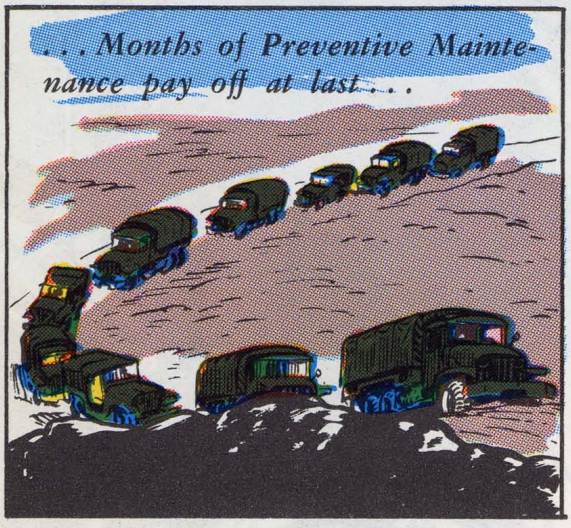

I BEEN CHECKIN' IT AND THE **CONTROL** HANDLES BIND, **AMONG** OTHER THINGS!!
AHH... DON'T LET IT WORRY YOU.

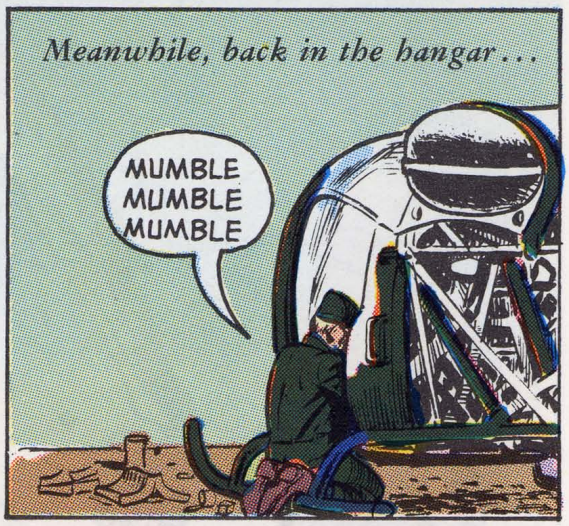
THAT CHOPPER'S BEEN SITTIN' THERE FOR MONTHS ...THERE'S JUST NO CALL FOR IT... GOSH, WHAT'S THE FLAP? BE COOL, MAN!!


NO FLAP, ONLY EVERY **OTHER** PIECE OF EQUIPMENT IS COMBAT READY!
OKAY, OKAY, I'LL GET AROUND TO IT ONE DAY... NOW LET'S GO TO CHOW!

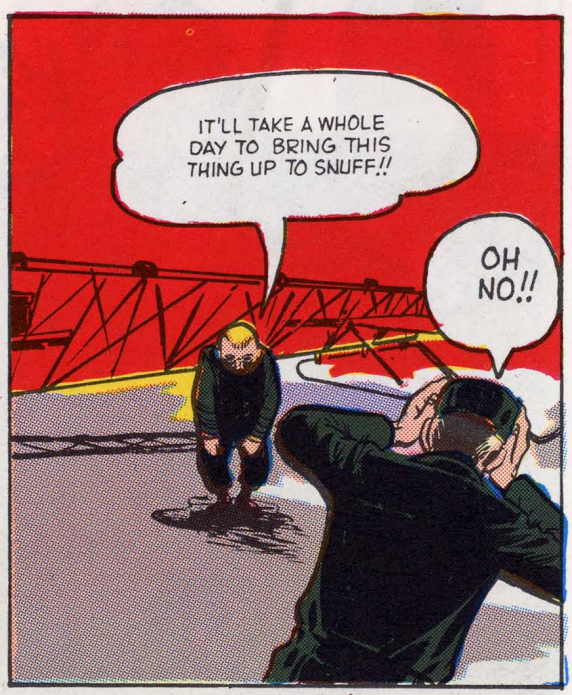

WE INTERRUPT THIS BROADCAST FOR A BULLETIN... THE DAM AT APEXVILLE HAS BURST... THE ENTIRE VALLEY IS BEING FLOODED... ALL GUARD AND REGULAR UNITS ARE BEING ALERTED!!!

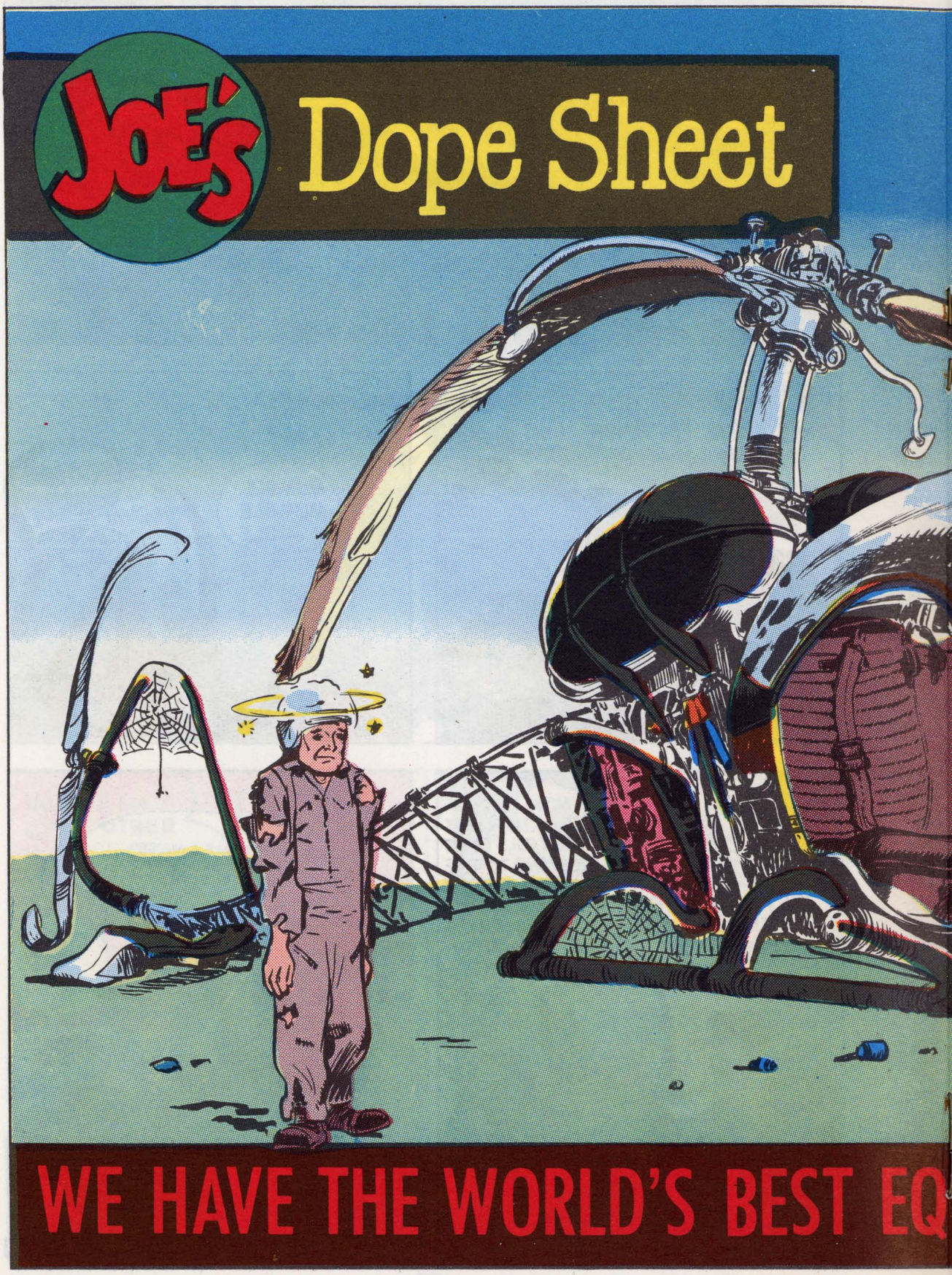

Within the hour the installation springs to life . . . equipment rolls to the touch of a button . . .

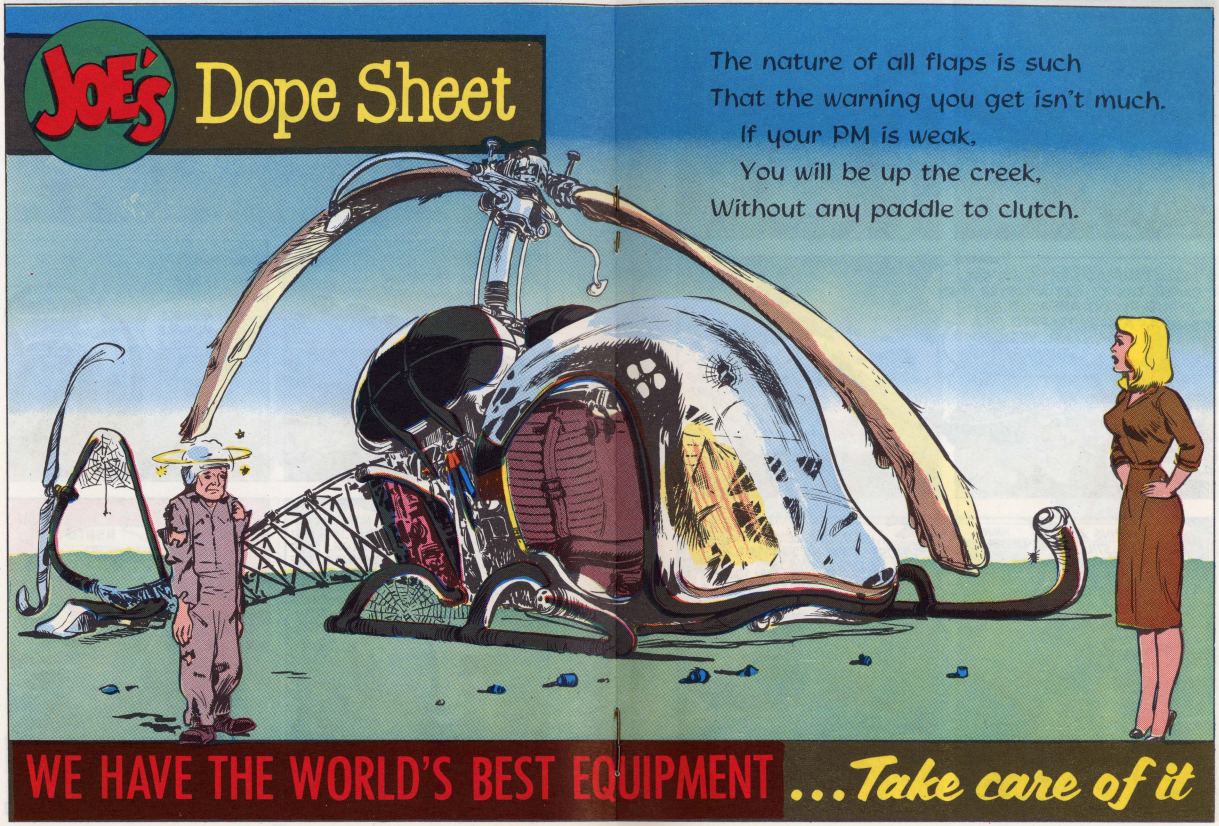

. . . Months of Preventive Maintenance pay off at last . . .

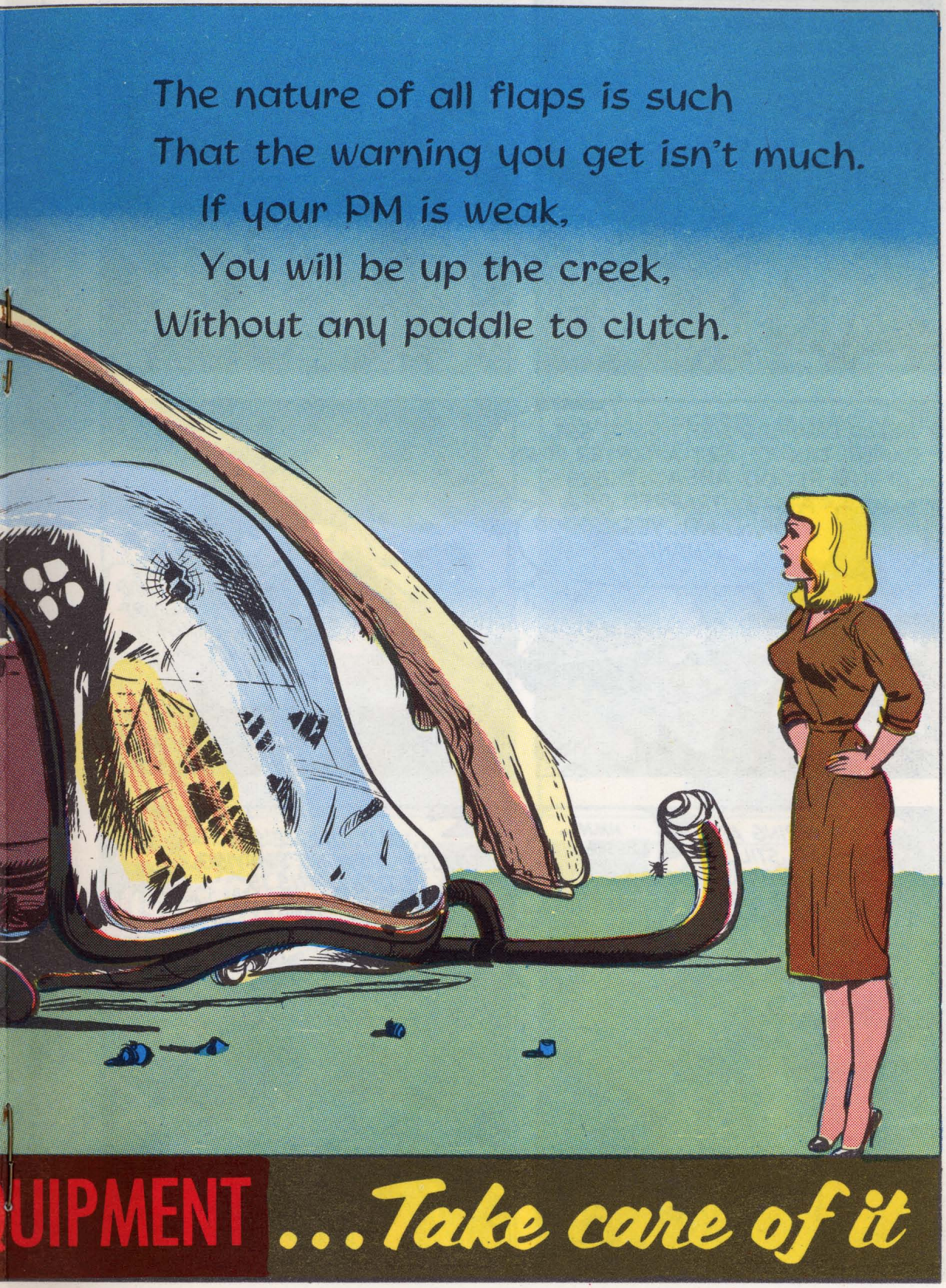

Meanwhile, back in the hangar . . .
MUMBLE MUMBLE MUMBLE

C'MON, JOE! GET THAT CHOPPER OUT ON THE FLIGHT LINE! THEY'RE CALLIN' FOR IT!
NOW, LET'S SEE...TH' FLIGHT CONTROLS DON'T RESPOND TO THE COCKPIT CONTROLS ...RADIO'S SNAFUED, HYDRAULIC SERVOS HAVE NO POSITIVE OPERATION...


IT'LL TAKE A WHOLE DAY TO BRING THIS THING UP TO SNUFF!!
OH NO!!

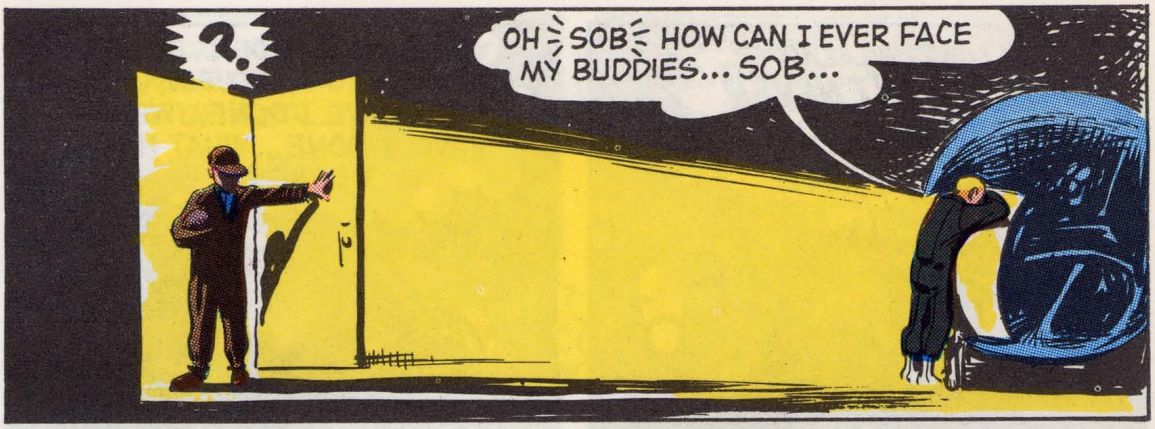

JOE'S
Dope Sheet
WE HAVE THE WORLD'S BEST EQ


JOE'S
Dope Sheet
The nature of all flaps is such
That the warning you get isn't much.
If your PM is weak,
You will be up the creek,
Without any paddle to clutch.
WE HAVE THE WORLD'S BEST EQUIPMENT ...Take care of it


The nature of all flaps is such
That the warning you get isn't much.
If your PM is weak,
You will be up the creek,
Without any paddle to clutch.
UIPMENT ...Take care of it

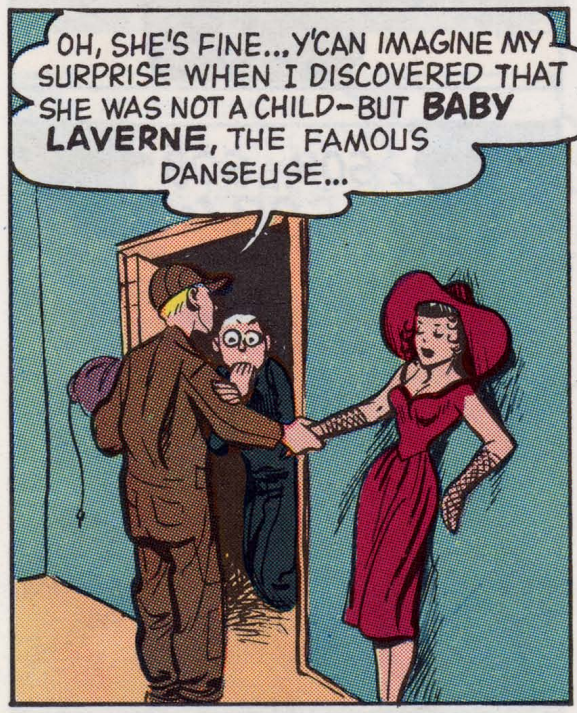
FLASH!! AUTHORITIES ARE CALLING FOR A HELICOPTER TO RESCUE BABY...
?
?
RING RING
HELLO...YES, SIR!! I HEARD THE RADIO...NO, OUR 'COPTER IS NOT OPERATIONAL...I'LL HAVE TO CALL CAMP ZIG ZAG TO REPLACE US!
HELLO, CAMP ZIG ZAG, THIS IS SGT. BAKER. CAN YOU GET A 'COPTER DOWN TO THE FLOOD AREA...THERE'S A BABY TRAPPED ON A ROOF...AND...YES...GOOD ...THANKS!
WAH WAH
A few minutes later...a transmission from the "chopper" dispatched from Camp Zig-zag...
THIS IS LT. BROWZE AT THE FLOOD AREA REPORTING!
I'M HOVERING AT 300 FEET...STILL NO SIGN OF A BABY... HOUSES ARE FLOATING DOWNSTREAM...
HMM... LESSEE NOW ...WOT'S MAKIN' THESE CONTROL PEDALS BIND... MUST BE THIS LINKAGE THAT GOES BACK DOWN THRU HERE, AND IT'S...
...WAIT...THERE'S A HOUSE...SOMEONE'S WAVING ...I THINK THIS IS IT...YES... IT IS!!
:GRUNT: THAT INCORRECT MOVEMENT IN THE FLIGHT CONTROLS MIGHT ORIGINATE UP HERE...

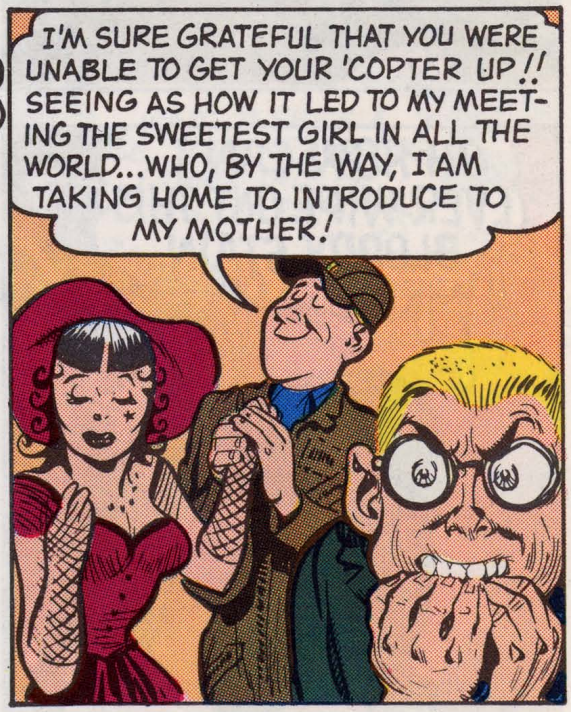
... I'M LOWERING A LADDER...
HOLY COW!! I NEVER EXPECTED THIS!!
GASP! CLICK
MY RADIO GAVE OUT... GOOD GRIEF... HE'S IN TROUBLE SOB WHAT HAVE I DONE... WHAT HAVE I DONE... WHAT HAVE I DONE?
I'M RESPONSIBLE... IF I HAD KEPT MY CHOPPER IN SHAPE I'D BE OUT THERE INSTEAD OF POOR BROWZE!
I'M A MURDERER... MURDERER! THERE'S NOTHING LOWER THAN A GOOF-OFF WHO ENDANGERS HIS BUDDIES!
OH HOW CAN I EVER WIPE OUT THIS BLOODY STAIN...
SOB... SOB SOB!!


?!
OH SOB HOW CAN I EVER FACE MY BUDDIES... SOB...

AHEM...I'M LIEUT. BROWZE OF CAMP ZIG ZAG... JUST THOUGHT I'D DROP BY TO MEET YOU NOW THAT OPERATION RESCUE IS A SUCCESS!!!
BROWZE... THANK HEAVEN YOU'RE ALL RIGHT!

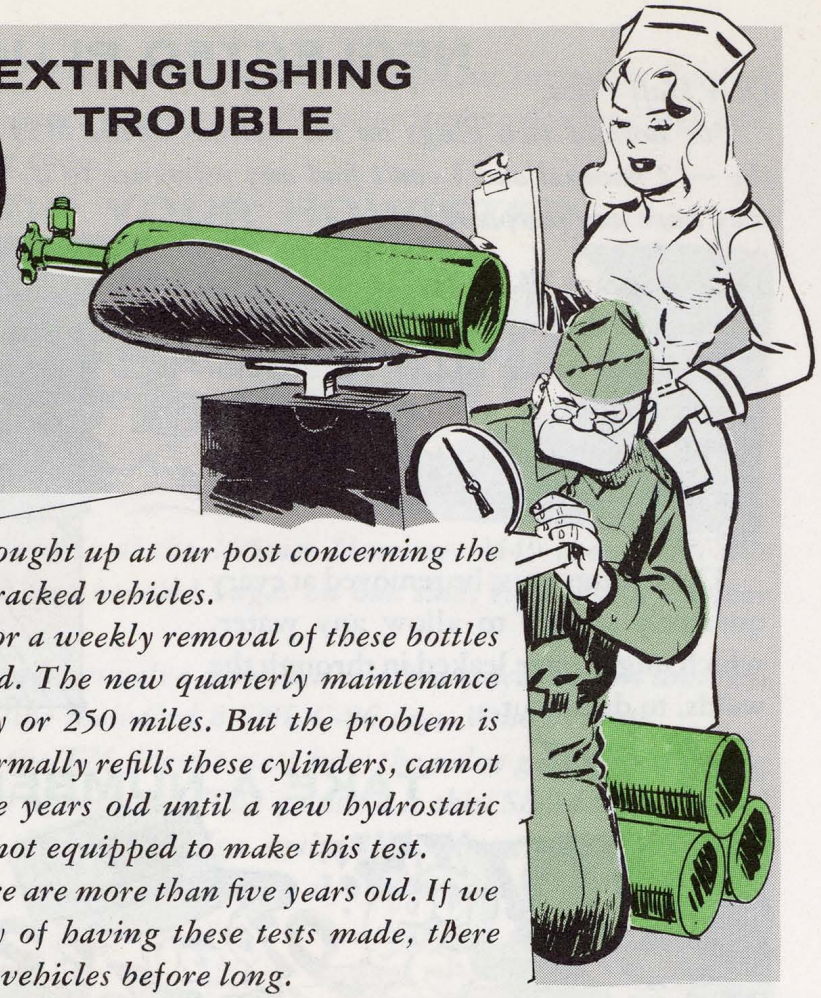
TELL ME...PLEASE... TELL ME DID YOU RESCUE THE BABY? THE BABY... MAN, SPEAK UP!


OH, SHE'S FINE...Y'CAN IMAGINE MY SURPRISE WHEN I DISCOVERED THAT SHE WAS NOT A CHILD-BUT BABY LAVERNE, THE FAMOUS DANSEUSE...


I'M SURE GRATEFUL THAT YOU WERE UNABLE TO GET YOUR 'COPTER UP!! SEEING AS HOW IT LED TO MY MEETING THE SWEETEST GIRL IN ALL THE WORLD...WHO, BY THE WAY, I AM TAKING HOME TO INTRODUCE TO MY MOTHER!

QUESTION AND ANSWER DEPARTMENT

EXTINGUISHING TROUBLE



Dear Half-Mast,

A question has been brought up at our post concerning the fixed CO_2 bottles on all tracked vehicles.

The vehicle TM calls for a weekly removal of these bottles to be weighed and refilled. The new quarterly maintenance system makes it quarterly or 250 miles. But the problem is that the fire chief, who normally refills these cylinders, cannot fill them after they're five years old until a new hydrostatic test is made. This post is not equipped to make this test.

Most of the vehicles here are more than five years old. If we can't work out some way of having these tests made, there will be a lot of deadlined vehicles before long.

J. W. McK.

Dear Mr. J. W. McK.,

There's not too much you can do about this now 'cause you have no choice but to turn in those fire extinguishers every five years for a test. That's what it says on page 9 of TM 5-687 "Fire Protection Equipment and Appliances" (20 Dec 57). The TM also tells who's qualified to make these tests.

This means if you have a fire extinguisher on an Ordnance truck, or a Quartermaster laundry unit, or an Engineer generator, it still comes under the provisions of TM 5-687 and must have a test.

Because of this many posts have set up a system where they won't get caught with their extinguishers down.

They do this by always making sure there are fire extinguishers in stock and when the extinguishers are due for the five-year inspection they're turned in with a DA Form 1546 and a replacement issued. Or they get it on direct exchange.

These posts space the turn-ins to make sure they're staggered. That way all the extinguishers wouldn't be due for a check at the same time. This keeps an extra load off the supply system every five years.

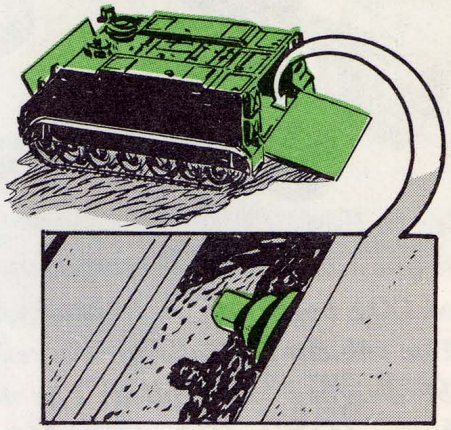
Half-Mast

NEGLECTED PLUGS

Dear Half-Mast,

I've noticed two plugs on the bottom of the M59 APC ramp. I've looked in the —12 manual and I can't find any reference to it. Why are they there and do they have any purpose?

M/Sgt W. M. McC.



Dear Sergeant W. R. McC.,

They're drain plugs. Or to give 'em their official name: PLUG, PIPE: automotive, sq-hd, S, cd- or zn-pltd, 3/8-NPTF (ramp drain) (444583)—2 ea. They're listed on page 71 of TM 9-2300-203-20P.

These plugs must be removed at every quarterly service to allow any water, which might have leaked in through the welds, to drain out.

Half-Mast

TAKE A NUMBER

Dear Half-Mast,

This Federal Supply Code for manufacturers puzzles a lot of guys like me, especially when the SM 5-3 series or SB 701-501 shows a manufacturer has several factories, divisions, or sub-divisions—and each has a different 5-digit number assigned to it.

We need this number for our DA Forms 5-73 and 5-73a. What happens if we use the wrong number? Is there any set rule you can follow to be sure you have the right code?

Sgt L. G.

Dear Sgt L. G.,

Know just what you mean. This 5-digit code can set you guessing. But, take a gander at the introduction in any ENG 7 & 8. It lists the manufacturer and the number to use. Same goes for your multi-part manuals. You'll find the code to use in the introduction in some TM's and in the appendixes in others.

If you don't have these pubs, check the 5-digit code listed in SB 701-501 for the manufacturer's name shown on the ID plate on your rig. If there are several numbers for the same company, about the only thing you can do is pick the

number you figure is the right one. The Engineer Equipment Inventory Control Point at the Enginer Maintenance Center will give your forms a double-check and see that they have the right code.

HOW FOR YOUR HOWITZER

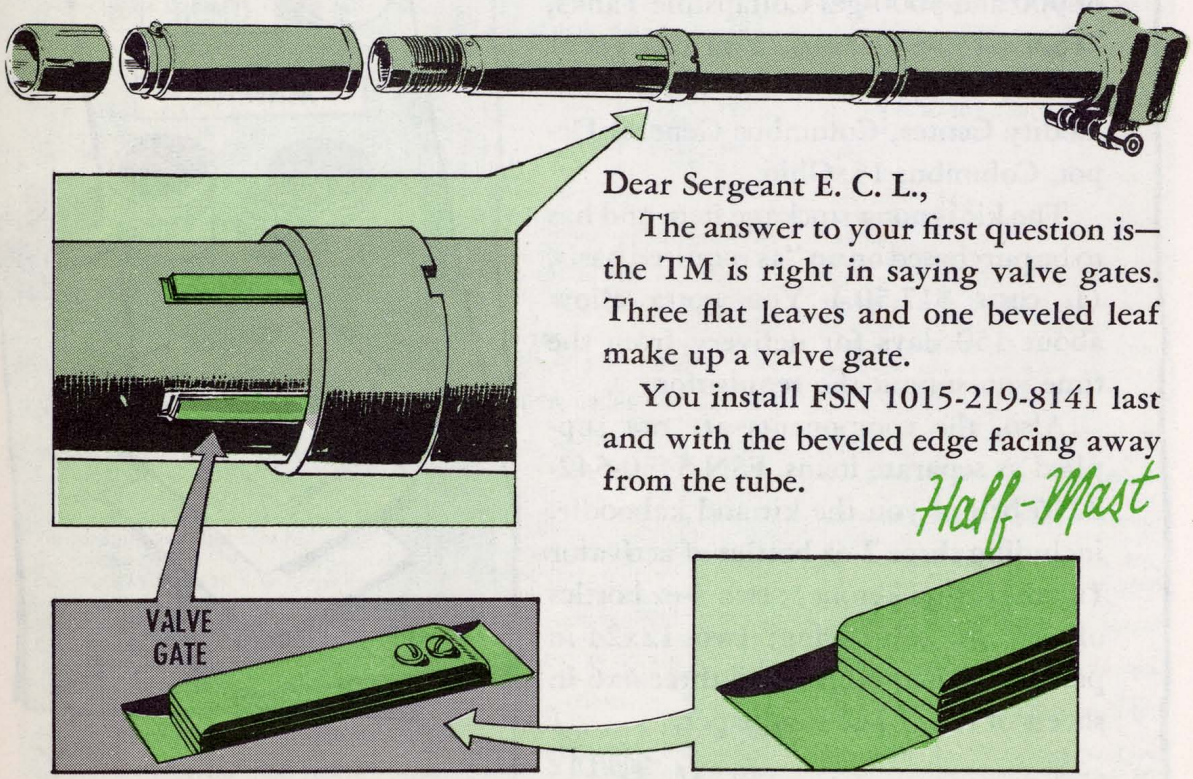
Dear Half-Mast,

In the bore evacuator assembly of the 105mm Howitzer M49 there are valve gates, six of one type have two beveled edges on one side, eighteen of another type are flat on both sides.

The TM 9-7204 calls these items valve gates, but our Ordnance support unit says they're called leaf springs like their Ord 8 SNL C-86 says. Who's right?

Also, paragraph 268 of the TM doesn't state how the valve gate or leaf spring FSN 1015-219-8141 should be installed. The question is this: Should the beveled edge be installed first with the beveled edge against the tube, or should it be the last one installed with the beveled edge facing away from the tube?

Sgt E. C. L.



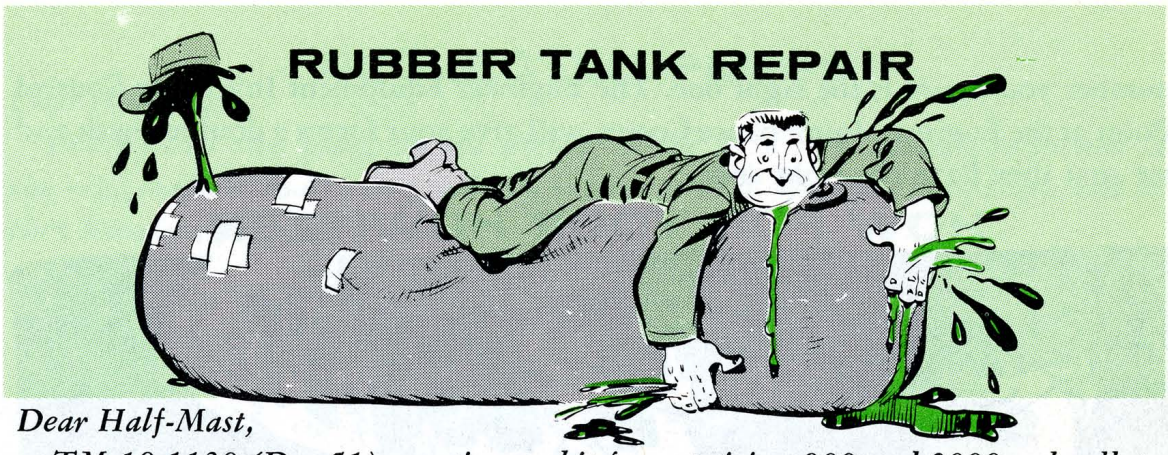
Dear Sergeant E. C. L.,

The answer to your first question is—the TM is right in saying valve gates. Three flat leaves and one beveled leaf make up a valve gate.

You install FSN 1015-219-8141 last and with the beveled edge facing away from the tube.

Half-Mast

RUBBER TANK REPAIR



Dear Half-Mast,

TM 10-1130 (Dec 51) mentions a kit for repairing 900 and 3000-gal collapsible fuel tanks. But the TM doesn't give any nomenclature or stock number. So tell me, hey, how can we requisition that kit or any of its components that we need?

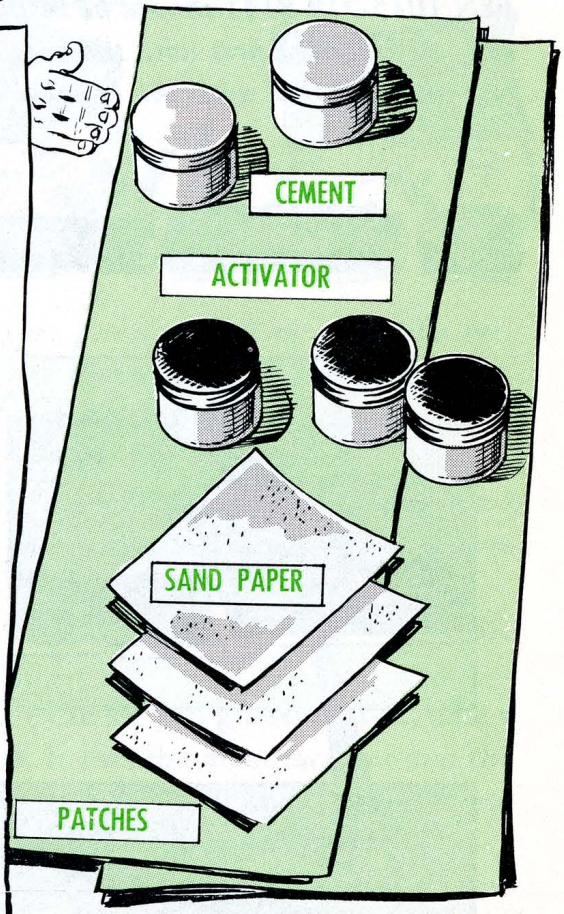
SFC P.R.C.

Dear SFC P.R.C.,

Sarge, your woes are about over. The kit you want is "Repair Kit, For Repair of 900 and 3000-gal Collapsible Tanks, "FSN 5430-542-2216. You can get it from QM Equipment and Parts Commodity Center, Columbus General Depot, Columbus 15, Ohio.

The kit is not a stockage item and has to be purchased on an "as required basis. (It costs $17.50.) You gotta allow about 150 days for delivery from the time you submit the requisition.

Also, the components are not supplied as separate items. FSN 5430-542-2216 brings you the kit and kaboodle, including three 2-oz bottles of activator (methyl ethyl ketone); two 3-oz bottles of cement, self-curing; two 12x24-in patches, coated fabric; and three 4x6-in sheets of No. 1 fine sandpaper.



Half-Mast

A selected list of recent publications of interest to Organizational Maintenance personnel.

TECHNICAL MANUALS

TM 1-1H-21C-1020 Jan
TM 1-1H-37A-1034 Dec Inspect Align Tail Rotor Drive Shaft, Pulley and Brake Assembly, to the Main Gear Box Take-off Flange
TM 1-1L-19A-1021 Dec L-19A Basic Trainer to L-19A
TM 1-8E2-5-7-4 Nov I II Parts Breakdown Magneto Mods SF2RW-1, FS2RW-2
TM 3-500 Nov Chem Equip Data Sheets
TM 3-1040-206-20 Nov Tank Flame Thrower
TM 5-2410-204-20P Dec Tractor Caterpillar Model D-8
TM 5-3810-207-10 Nov Crane-Shovel 20-T 3/4 Cu Yd Quickway Mod M200
TM 5-3810-210-12P Dec Crane Shovel, Truck Md, 3-T Cap Schield Bantam Mod AEM-53
TM 5-3825-201-20P Dec Snow Removal Unit, Rotary Sicard Model B1-10
TM 5-3825-208-12P Dec Sweeper, Rotary 8 Ft. Spencer Modl MS-1
TM 5-3895-203-15P Dec Spreader, Aggregate: Towed 4-Wh Pneu Tires, 8 Ft
TM 5-3895-208-10 Nov Mixer, Bituminous Material Barber-Green Mod 848
TM 5-3895-209-12P Dec Roller, Motorized 9-T Galion Mod 3T-9G
TM 5-4310-200-15P Dec Compressor, Reciprocating 15 CFM, 175 PSI
TM 5-4320-207-35P Dec Pump, Centrifugal Base 25 Ft Hd, 115 GPM, 2 In Carter Mod 7M and 7MCW-2
TM 5-4610-202-20 Nov Water Purif Unit Elec 115 V 60 Cy 600 GPH
TM 5-4940-203-12 Nov Shop Equip Elec Repair, Set No. 4
TM 5-6115-255-10 Dec Gen Set 3 KW
TM 9-1055-204-20P Nov Launcher, 762-MM Rocket XM 33 and Rkt, 762-MM M31-series
TM 9-1410-250-20P/2 Dec Guided Missile M6, Simulator, Guided Missile Flight OA-1643/M (Nike-Hercules)
TM 9-1410-251-12/2 Dec Nike-Hercules Assembly Area Checks
TM 9-1430-250-20P/3 Dec Radar Course Directing Central Ant-Rec-Trans Grp, Msl Tracking, OA-1485/MPA
TM 9-1430-250-20P/5 Dec Launcher Control Grou Fld Nike-Hercules
TM 9-2330-232-25P Dec Trailer, Low-Bed, 3-Ton 4 Wheel, XM114E1 and 5-Ton 4-Wheel XM455
TM 11-530 Dec Instal Practices: Aircraft Electronic Wiring
TM 11-1550-200-12 Dec Surveillance Drone OA-2343/USD-1
TM 11-3655-200-12P Nov Hydrogen Set AN/TMQ-3
TM 11-5805-215-20P Nov Part Tools for control monitor C-1151/TC
TM 11-5805-216-15P Nov Parts Tools for remote switching control C-1509/TC
TM 11-5805-268-12P, Nov Power Supply PP-850/FCA
TM 11-5815-202-12P Nov Printer-Projector, Teletype TT-71/UG
TM 11-5820-226-15P Nov Cabinet Elec Equip CY-938/VRC, CY-938A/VRC, Rack, Elec Equip MT-1236/VRC
TM 11-5820-239-10P Nov Radio Freq Transmission Line Assy CG-1013/U
TM 11-5820-341-12P Nov Radio Set AN/URC-4
TM 11-5820-357-10P Nov Receiver, Radio R-390/URR
TM 11-5820-357-20P Nov Receiver, Radio R-390/URR
TM 11-5820-367-12P Nov Radio Sets AN/FRC-28, AN/TRC-28
TM 11-5821-212-20P Nov Transmit Set Radio AN/FRT-51
TM 11-5826-200-12P Nov Receiver, Radio R-746/AR
TM 11-5895-240-20P Dec Receiving Set, Countermeasures AN/TLR-3 (XE-2)
TM 11-5895-249-12 Dec Surveil Drone Test Set TS-1299/USD-1
TM 11-5935-203-15P Nov Connector, Recep Elec U-186A/U
TM 11-5950-204-15P Nov Transformer, Power, Fixed Autotransformer TF-146/G
TM 11-5965-231-12P Nov Headset, Electrical H-113/U
TM 11-5965-241-12P Nov Handset, Signaling Unit H-102/TRC-29
TM 11-6125-200-20P Nov Motor Gen PU-20/C, -20A/C, -20C/C, -33/C
TM 11-6140-200-15 Oct Battery, Storage, BB-401/U
TM 11-6230-203-15 Nov Ground Obstruction Markers MK-222/G, MK-222A/G
TM 11-6615-209-15 Dec Thin Wing Compass Transmitter
TM 11-6625-218-12P Dec Freq Meter AN/TSM-16
TM 39-H4046-2 Nov Misc Spec Handling Equip for M57 and XM57E1 Adaption Kits

TECHNICAL BULLETINS

TB 9-AMM 2 Nov
TB AVN 10 Dec Airplane First Aid Kit
TB AVN 23-5-12 Dec UER Digest
TB CML 52 Dec Radioactive Test Sample, Strontium 90-Y-TT RIUM 90, Beta, M6
TB ENG 347 Dec Winteriz Techniques for Eng Equip
TB 9-2300-225-20 Dec 1/4-T M38, M38-A1, M38A1C, M170; 3/4-T M56, M56C, M56B1
TB 9-5013-1/2 Dec Painting Nike-Ajax Missile

LUBRICATION ORDERS

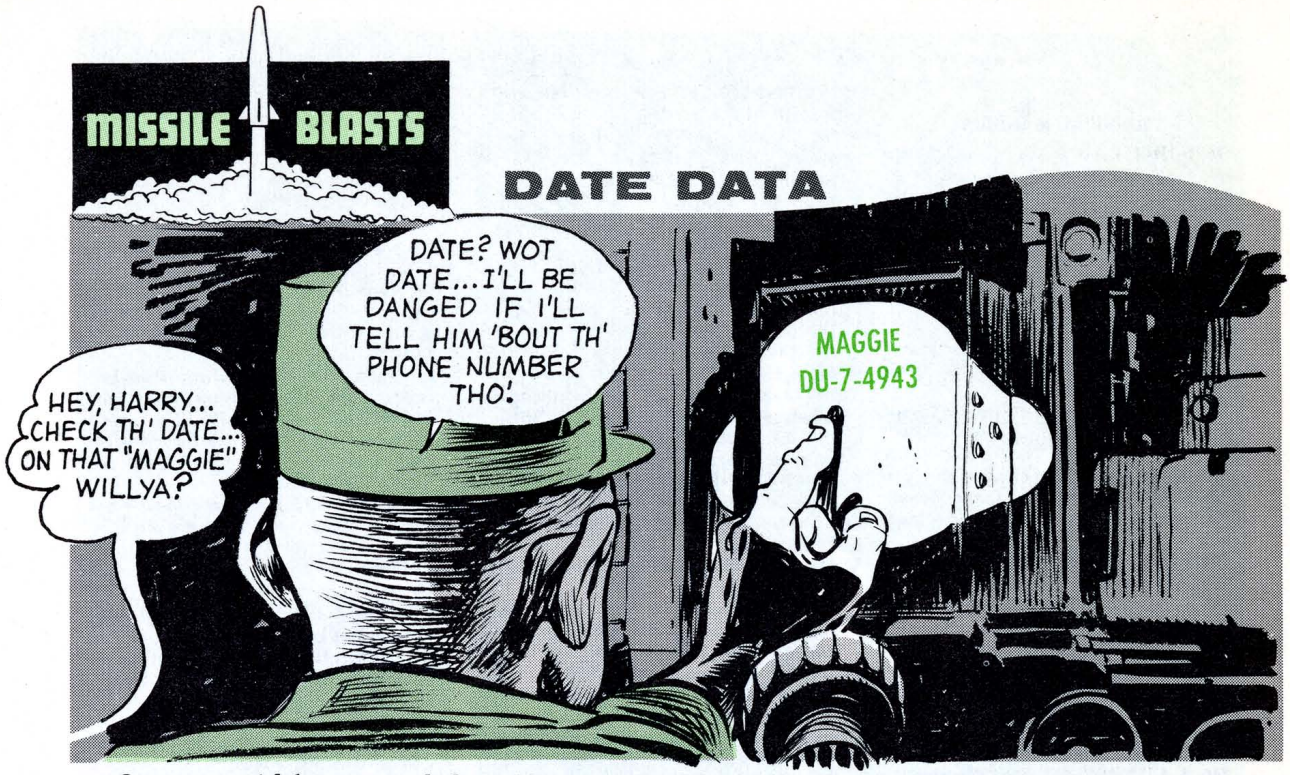
LO 5-1027-1, -2, -3 Grader, Road, Diesel, Austin-Western Mod 99-H
LO 5-1033-1, -2, -3 Grader, Road, Diesel, Galion Mod 104
LO 5-1045-2 Nov Grader 12 Ft Adams Mod 550
LO 5-1053-1 Nov Crushing, Screening Plant Pioneer Mod 33 Triplex
LO 5-4310-201-20 Nov Air Compressor, Rotary, 60 CFM 10 PSI, Harris Mods 2M, 2MV
LO 5-4310-207-20 Dec Compressor, Rotary, 210 CFM 100 PSI Harris Mod J-210-FED
LO 5-4310-220-20 Dec Air Compressor, Rotary, 210 CFM 100 PSI Joy Mod RPA 210 GD3 MS-2
LO 5-5170 Nov
LO 5-5171 Nov
LO 5-5181 Nov
LO 5-5183 Nov
LO 9-2350-202-10 Aug SP Twin 40-MM Gun M42, M42A1
LO 10-3930-204-20 Aug Forklift Truck 6,000 lbs Cap Towmotor, 540RS, Types VI, VII
LO 10-3930-205-20 Sep Fork Lift Truck Gas PT 15, Army Mod MHE 116

FORMS

DA Cir 310-91 Dec Military Publications
DA Form 9-118 Dec Check Sheet Assy of Nike-Herc GM M6 for Missile Electrical Checkout per TM 9-1410-251-12/2.
DA Form 9-119 Dec Nike-Herc Check Sheet Air and Oil Servicing of Accessory Power Supply APS per TM 9-1410-25-12/2
DA Form 9-120 Dec Check Sheet Calibration of Herc Missile RF Test Set Group, per TM 9-1410-251-12/2
DA Form 9-121 Dec Check Sheet Missile Electrical Checkout per TM 9-1410-251-12/2
DA Form 9-122 Dec Check Sheet Fuel Servicing, Operational Test (Hot Run) of accessory Power Supply (APS) per TM 9-1410-251-12/2
DA Form 9-123 Dec Check Sheet-Uncrating Instal Missile Rocket Motor Subassembly per TM 9-1410-251-12/2
DA Form 9-124 Dec Check Sheet Uncrating, Instal HE Warhead Body Sect per TM 9-1410-251-12/2
DA Form 9-125 Dec Check Sheet Final Prep Warhead Body Sect and Forward Body Sect per TM 9-1410-251-12/2
DA Form 9-126 Dec Check Sheet Assy Rkt Motor Cluster per TM 9-1410-251-12/2
DA Form 9-128 Dec Check Sheet Final Prep of Missile per TM 9-1410-251-12/2
DA Form 9-129 Dec Check Sheet Normal Deactivation Procedures per TM 9-1410-251-12/2
DA Label 47
DA Pam 750-1-1 Nov PM Guide for Commanders (Nike-Ajax)
SB 3-33 Dec Chem Corps Adopted Items of Materiel
SB 55-31 Nov Trans Corps Adopted Items of Materiel
FM 6-60 Dec Honest John Rocket Launcher M289
FM 23-8 U. S. Rifle 7.62-MM, M14

SUPPLY MANUALS

SM 5-5-4800
SM 9-1-5110, -5120 Oct Hand Tools
SM 5-4-2090-504 Sep Repair Equip plywood boat pontoon
SM 5-4-3449-SO1 Dec Sheet metal outfit
SM 5-4-5180-518 Oct Pioneer tool kit
SM 5-4-6230-SO1 Nov Light Set
SM 9-4-1450-NO2 Dec Fuel Kit Corporal II
SM 9-4-5180-A 20 Sep 2nd Ech No. 2 Common tool kit
SM 9-4-5180-A48 Oct Special Weapons Tool Kit
SM 9-4-5180-A49 Oct Special Weapons Tool Kit
SM 9-4-5180-A 73 Oct Aircraft Hydraulic repairman's tool kit (MOS 678.10)
SM 9-4-5180-A74 Oct Aircraft Air frame repairman, tool kit (MOS 673.10)
SM 9-4-5180-A77 Oct Turret mechanic's tool kit (MOS 131.10)
SM 9-4-5180-B17 Nov Fire control mechanic's tool kit (MOS 213.30, 214.30)
SM 9-4-5180-B19 Nov Nike Repairman tool kit (MOS 433.10)
SM 9-4-5180-B21 Mechanical Assembler Guided Missile
SM 9-4-5180-B22 Nov Tool Kit, Electronic Assembler, Guided Missile (MOS 223.10) (5180-545-8643)
SM 9-4-5180-B22 Nov Elec Assembler Guided Missile Tool Kit
SM 9-4-5180-87-4 11 Dec No 2 Supplemental Tool Kit
SM 5-4-5180-505 Sep Carpenter's tool kit (Eng Plat)
MWO Ord Y4-2-W13 Dec Dir Comp Group OA-865A/MSA 7: Improve MTI Synch Stability



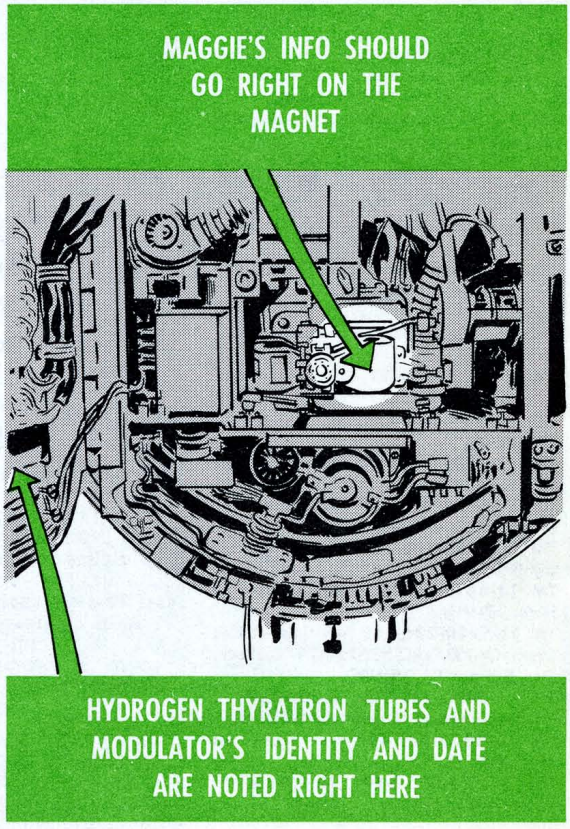
Sure would be a good deal if you could keep track of the time those expensive electron tubes are used in your guided missile systems—especially since Ordnance'd like to get its hand on that scoop. Well . . . you can.

Yes sir, with the help of a grease pencil, you can tell how long your modulator tubes, hydrogen thyratron tubes and magnetrons work before they fail.

All you have to do is mark down the day, month and year when you install the tube. The best place for info on the maggie is right on the magnet. The best bet with the other tubes is to put the scoop somewhere near them. A good spot on the Nike track radars is on the cover. Just write the name of the tube—like the modulator—and the date it was installed.

It doesn't pay to mark the glass part of the tube—the heat might melt the info away. And don't use the grease in a place where there's a chance dust could gather on the mark and lead to arcing.

Speaking about arcing . . . it can also happen if stray electricity follows the path of a carbon or lead pencil mark. So don't use pencils like that for writing down installation dates.



NOT YOUR JOB

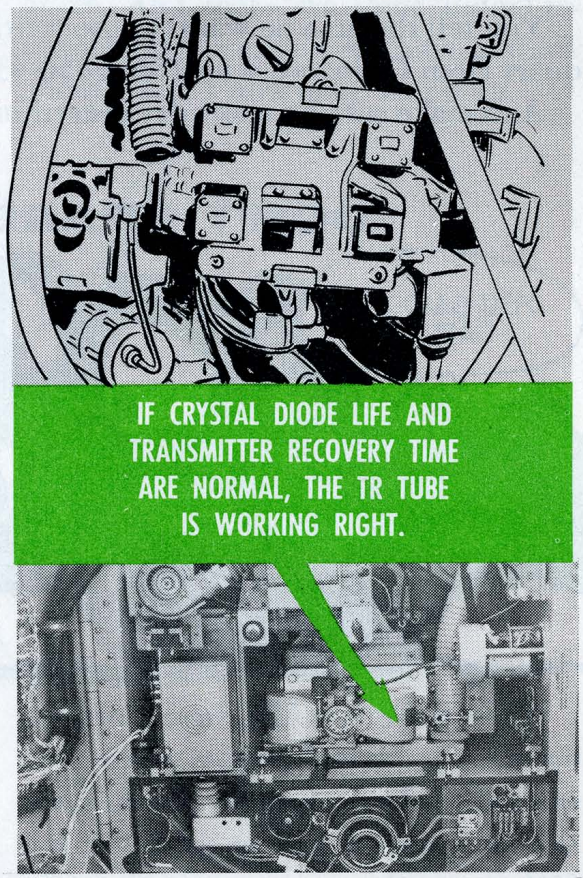
Hold up there.

You Nike guys can save wear and tear on some equipment and leave yourself some time for other work if you remember one thing.

Don't, but don't, fool around with the zero set switches in your computer — except to clean and lube 'em according to LO 9-5018. The switches are Ordnance's babies—when it comes to repairing.

NEW LEASE ON LIFE

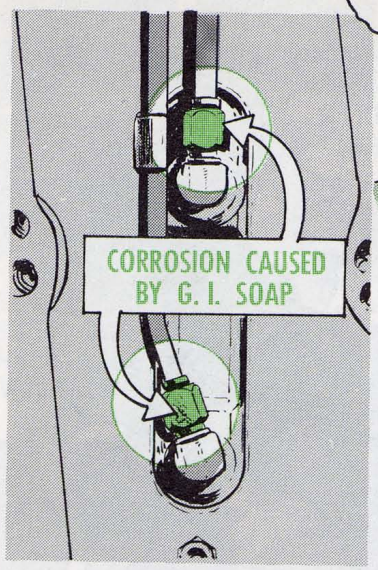
There're people who make mountains out of molehills and now they're building 'em out of discarded 6164 TR tubes—the ones used in Nike missile and target track radars.

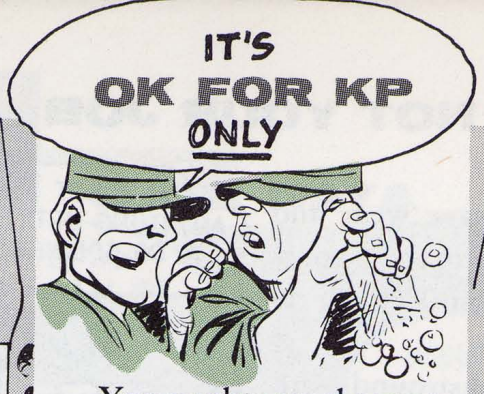


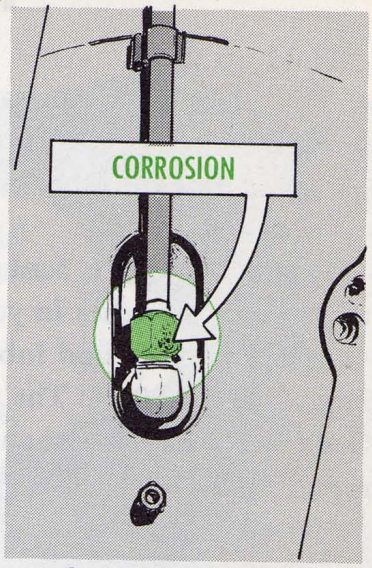
Trouble is . . . a lot of the tubes are still good. Some outfits toss 'em on the salvage pile because they get low voltage readings on the keep-alive cap—through the 3 Megohm resistor. But that kind of check is dead wrong.

The deal is that the reading is normally in the 220-250 volt range—particularly when Sylvania tubes are used. But Microwave Associates will read around 190 volts, which is OK for them.

So . . . if your crystal diode life and transmitter recovery time are normal, it's a safe bet that the TR tube is working right.







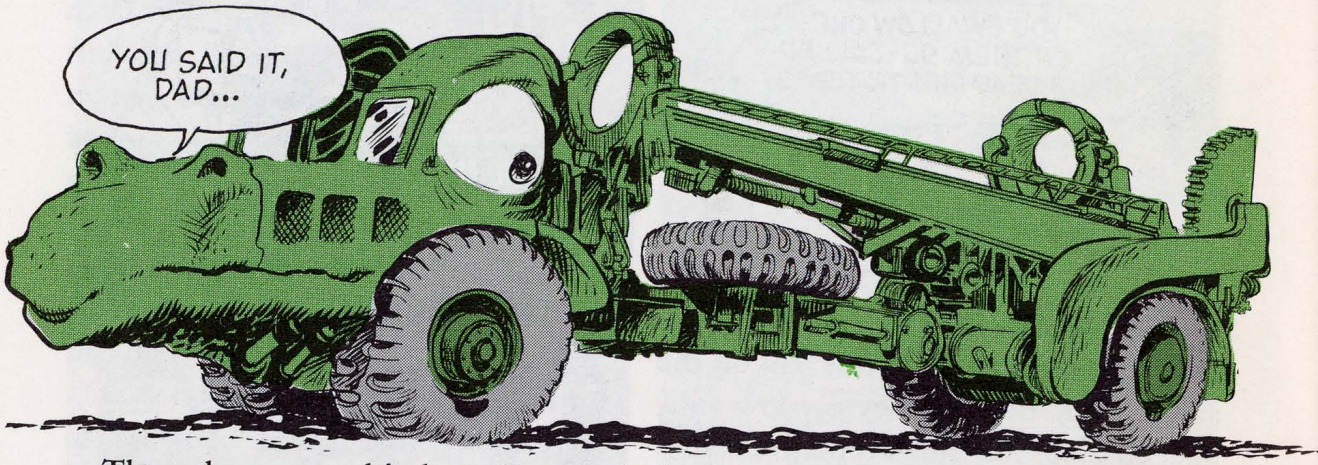
You oughta see the way they're repairing ceilings back at depot—what with the guys going through them after they get a Nike-Ajax missile with corrosion around the "B" nuts.

The way it looks, some support unit guys pressure-tested the propulsion system for leaks with GI soap and water. That's a real bad deal 'cause the soap contains lye . . . and lye means corrosion.

You tell the man he wants to use wetting agent for those checks. He can get a quart from Ordnance with FSN 6850-433-4042.

And make sure he wipes dry everything after he's done testing.

DON'T SPARE THE SPARE



Then there was this here Corporal outfit. . . and it had a sharp looking M2 erector. And you shoulda seen the spare tire—it looked as new as the day it was first mounted.

And why not? The spare had never been used. If the crew had looked through TM 9-1870-1, they'da known how to tell that the tires on the erector were showing signs of wear.

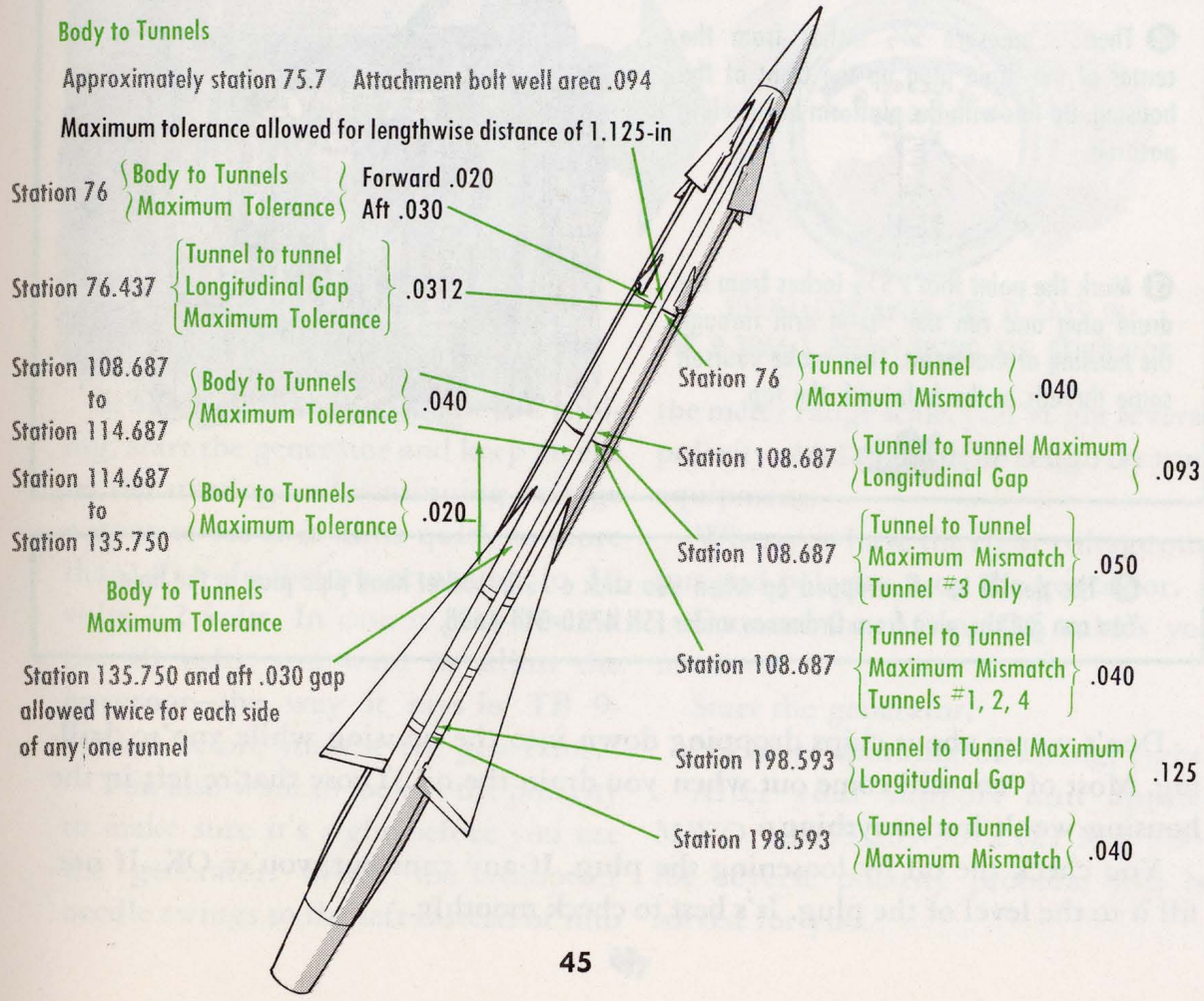
So keep checking those tires . . . and take the time now and again to rotate the tires—at 2,000 miles if they're wearing unevenly, or at 6,000 miles regardless. Rotation can add 20 percent to the life of your tires.

They're not in your Nike-Ajax battery TOE, but it might pay to keep some gloves handy in the launching area.

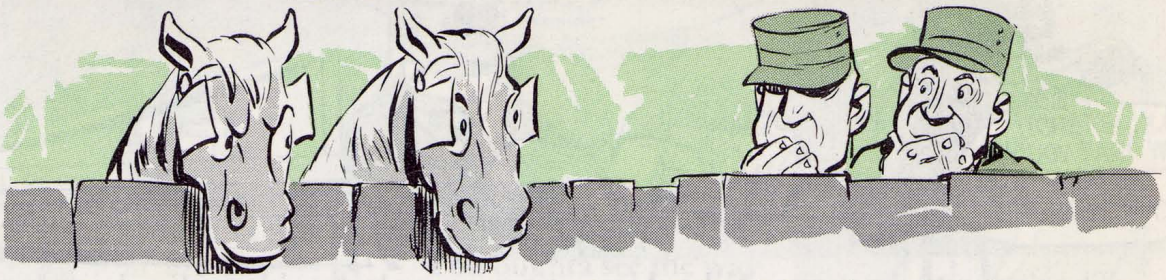
That way . . . when the man comes around to check the clearance between the tunnels and skin surface of your missiles, you can hand him the gloves and tell him first to put 'em on before he checks the tunnels. The gloves'll keep him from making a fingernail inspection which is about as accurate as telling time on a clock without hands.

Once his hands are covered, give the man a thickness gage and remind him that you're allowed .020 (20-thousandths) clearance forward of station 76.

There're some other things you ought to know. There are some exceptions to the rules about the body to tunnel clearances. And there are some tunnel-to-tunnel tolerances that you have to think about. Here's how they shape up.



THIRD PLUG NEEDED



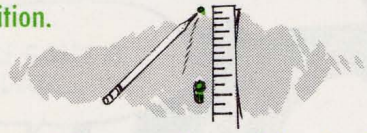
OK . . . so you've got two plugs on the middle joint shaft housing on your M280-series Corporal servicing platform. One's for filling the housing with oil . . . the other's for draining it.

What you need is a third plug—so's you can check the oil level.

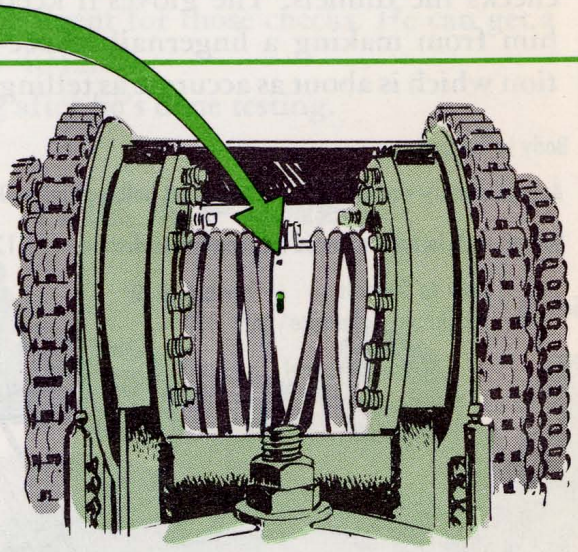
It's easy enough to put a check plug in the housing.

❶ First . . . dig into your No. 2 Common Tool Set and come up with a $^{23}/_{64}$-in drill and a $^{1}/_{8}$-in NPT tap.

❷ Then . . . measure $5^{1}/_{2}$ inches from the center of the drain plug up the front of the housing. Do this with the platform in traveling position.



❸ Mark the point that's $5^{1}/_{2}$ inches from the drain plug and run the $^{23}/_{64}$-in drill through the housing at that point. Then make yourself some threads in the hole with the tap.

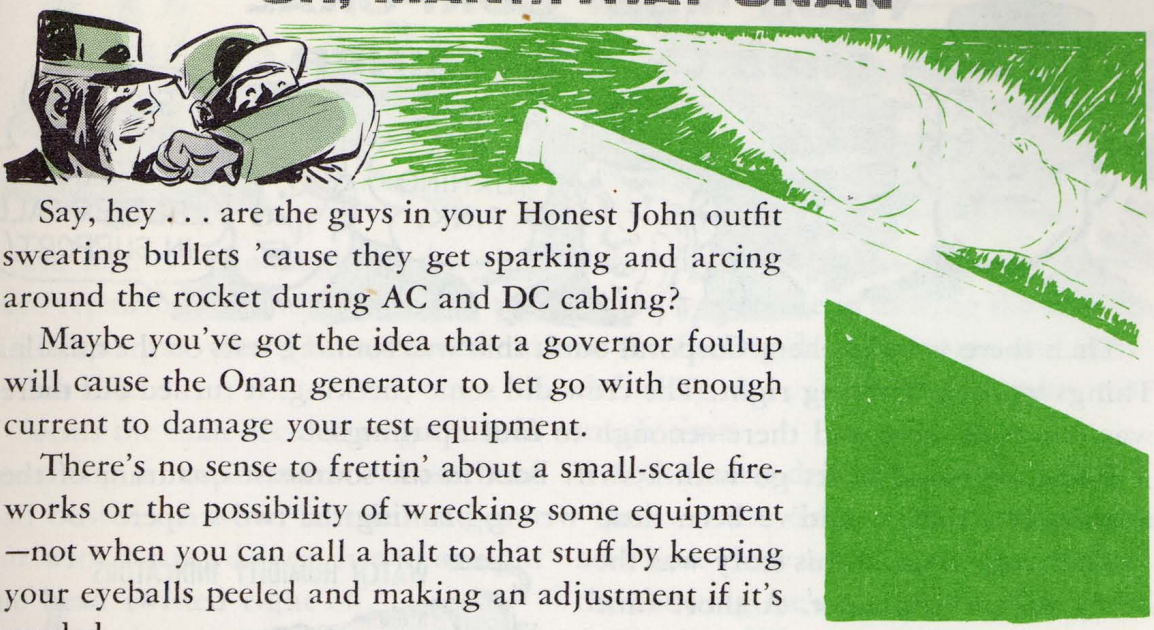


❹ The deal'll be all wrapped up when you stick a $^{1}/_{8}$-in socket head pipe plug in the hole. You can get the plug from Ordnance under FSN 4730-044-4688.

Don't worry about chips dropping down into the housing while you're drilling. Most of 'em will come out when you drain the oil. Those that're left in the housing won't hurt anything.

You check the oil by loosening the plug. If any runs out, you're OK. If not, fill it to the level of the plug. It's best to check monthly.

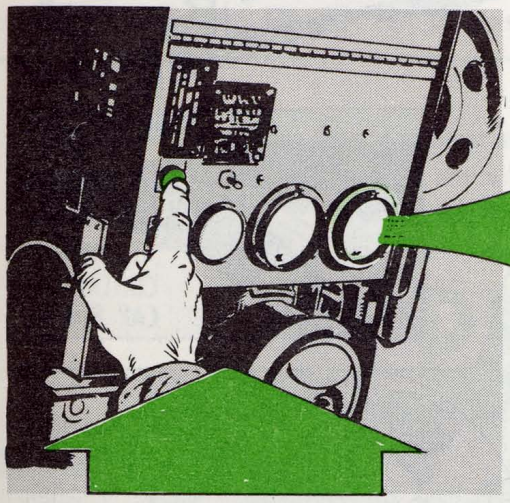
OH, MAN...THAT ONAN



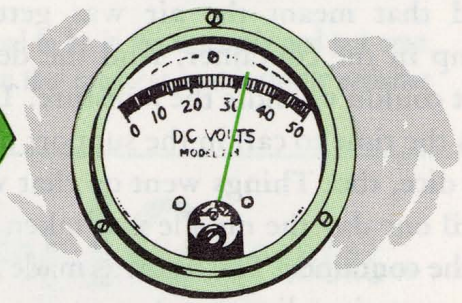
Say, hey . . . are the guys in your Honest John outfit sweating bullets 'cause they get sparking and arcing around the rocket during AC and DC cabling?

Maybe you've got the idea that a governor foulup will cause the Onan generator to let go with enough current to damage your test equipment.

There's no sense to frettin' about a small-scale fireworks or the possibility of wrecking some equipment —not when you can call a halt to that stuff by keeping your eyeballs peeled and making an adjustment if it's needed.



IF IT FLICKS PAST 40 VOLTS BEFORE RETURNING TO 30 VOLTS ± 2 VOLTS...



...ADJUST GOVERNOR LIKE IT SAYS IN TB 9-3066-1 BEFORE USING THE GENERATOR

It's this easy. Before AC or DC cabling, start the generator and keep an eye on the starting and continuing voltage output to see if it flicks quick to more than 40 volts before returning to 30 volts ±2 volts. In case it goes beyond the 40 volts, you want to adjust the governor—the way it says in TB 9-3066-1 before you use the generator.

You also want to look at the polarity to make sure it's right before you use the generator. When the voltmeter needle swings to the left instead of into the meter range scale, you've got reverse polarity. And that can be rough on your equipment.

When you have the right voltage output and polarity, stop the generator.

Connect the AC or DC cables you need.

Start the generator.

No more sparking or arcing, right?

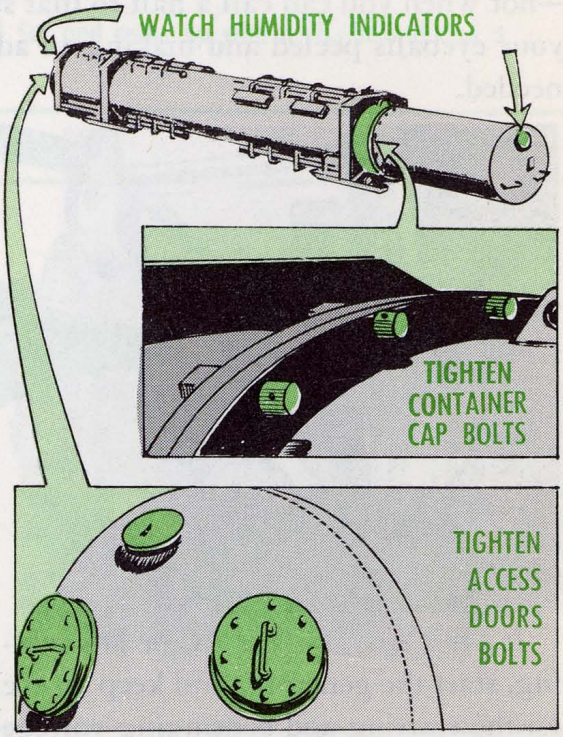
After your support unit applies MWO 9-1055-209-30/2 (21 May 59), the reverse polarity problem will be solved for you.

YOUR M351 CORPORAL MISSILE CONTAINER

Then there was this here Corporal outfit that was running tests on the missile. Things weren't working right. The crew did some checking. It turned out there was corrosion here and there—enough to foul up things.

The crew could've let go with a swift boot in the southeast quadrant of the missile—but they would've been dead wrong blaming the two-striper.

The real villain in this story was the M351 missile container. A short time after the outfit got the missile in its container the humidity indicators on each end began changing from blue to pink. And that meant the air was getting damp in the container. And the desiccant couldn't handle the moisture. That was the time to call in the support unit. No dice, tho. Things went on that way until one day the missile was taken out of the container. The test was made and the corrosion discovered.



Moist air is kept out of the container by air pressure that's supposed to be in the container. The right amount of air is 6 ± 1 PSI. That's right—not 8 ± ½ as you might've heard.

If the container refuses to hold the pressure, the container is either a bad one or it's not sealed right. You can check the seal angle by tightening the container cap and access doors and replacing the valve cores. If that doesn't help, you've got a bad container. That's when you read TB 9-5038-2/3 (20 Apr 58) for the word on spotting leaks and what to do about 'em. If you don't have the tools and equipment to make the repairs, send the missile back to your support unit.

Something else to think about with this business of moisture . . . whenever you latch onto a new batch of desiccant, don't keep it if it comes your way in a cardboard or wooden container. The stuff's gotta be protected from the air until you use it so it ought to be sent in your direction in a sealed, metal container.

FUELISH BUSINESS

The medics had a tough one the other day—repairing the Southern end of this Nike-Ajax guy who'd been chewed out by his CO.

Seems the man decided to gamble in removing a tunnel screw whose head had busted off when he tried to get it out with a screwdriver. It was so tight the head twisted right off.

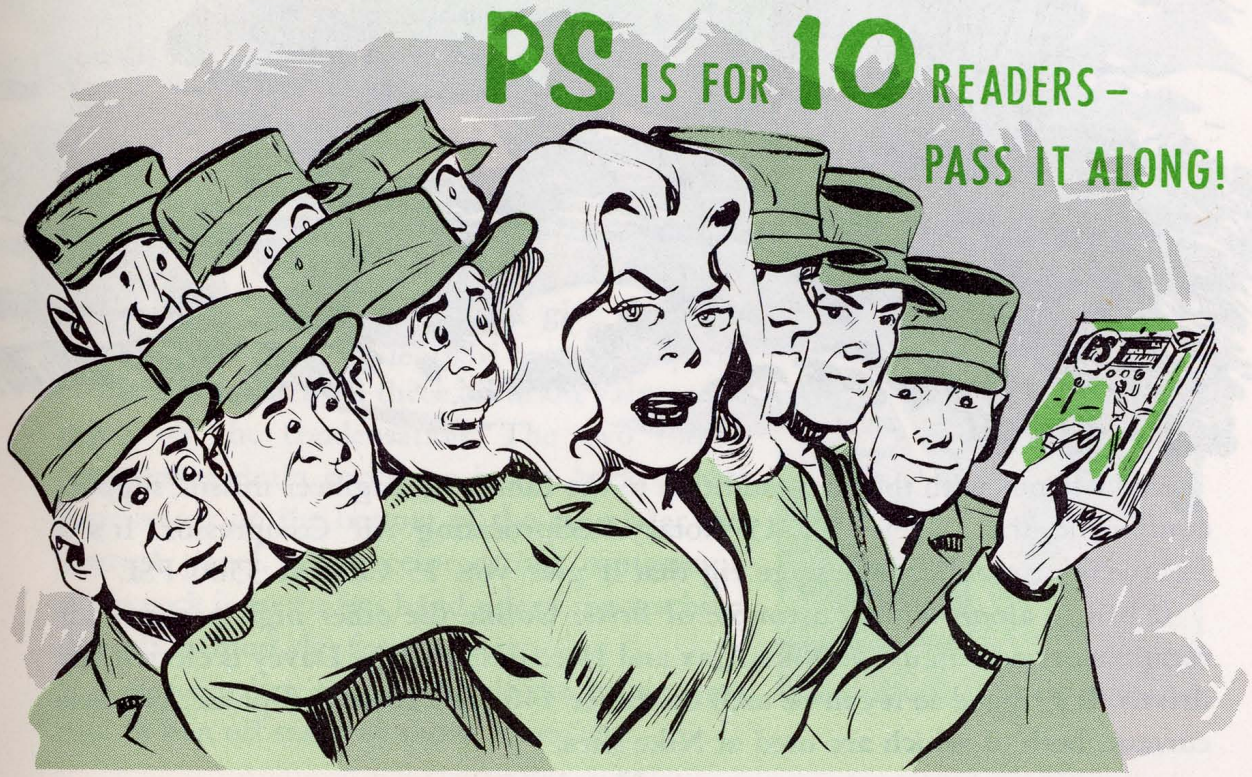
Anyway . . . the missile was in the assembly building. He figured it was a five-minute job to drill out the screw. There was no use in moving the missile to the fueling-defueling area and then defueling it . . . that would take too much time.

So he starts drilling. All of a sudden —ps-s-s-t—the drill went through the acid line. He was lucky, tho. Except for the chewing, he's almost the same guy.

The big difference is that he'll never again use a drill around a fueled missile.

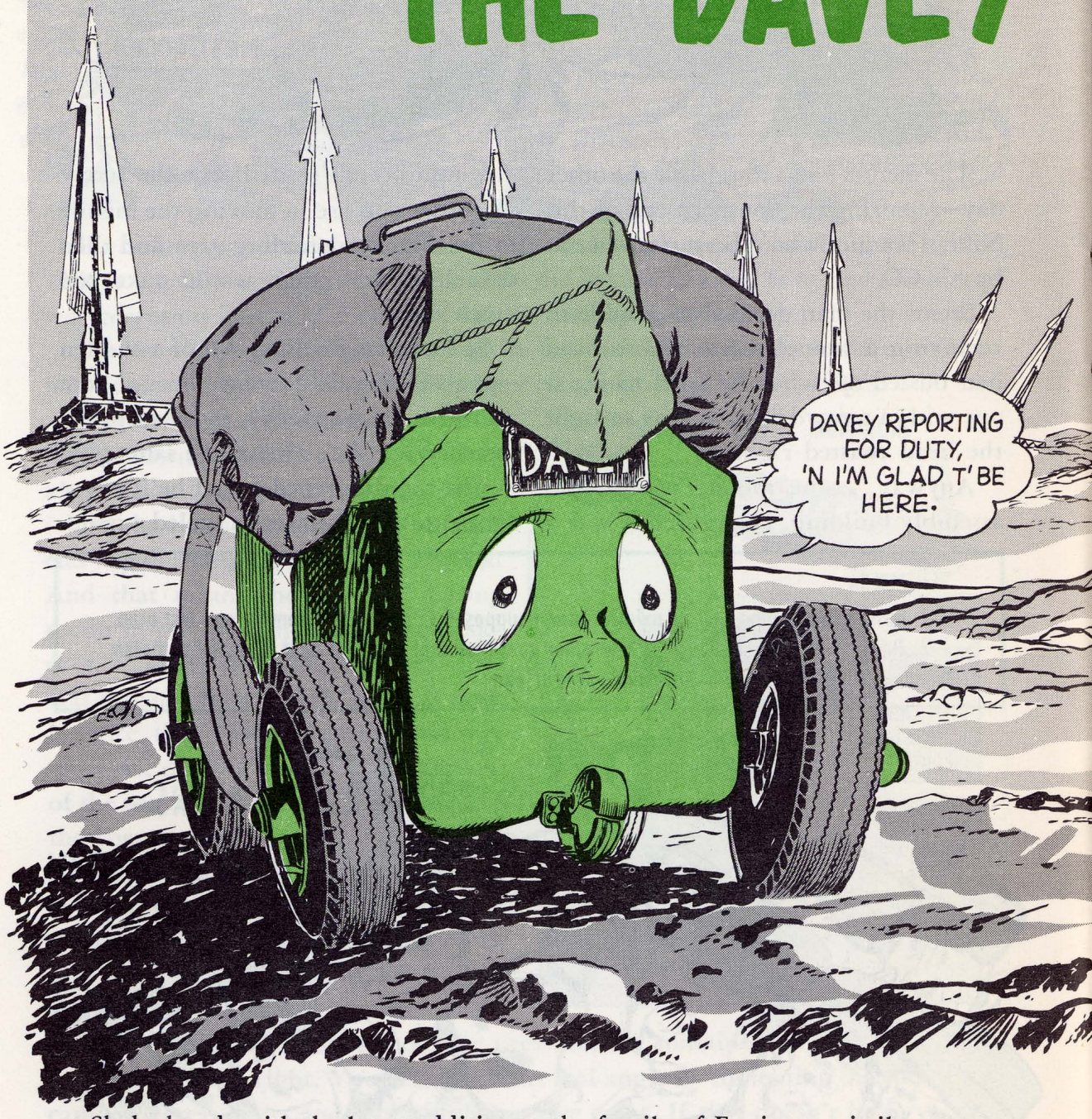
REMEMBER:

1. Missiles containing fuel or oxidizer aren't supposed to be in the assembly and test area.
2. Drilling, cutting, soldering or any other operation that produces heat is strictly verboten on missiles that are fueled or have explosives in 'em.



Meet a Newcomer
To Your Missile Site . . .

THE DAVEY

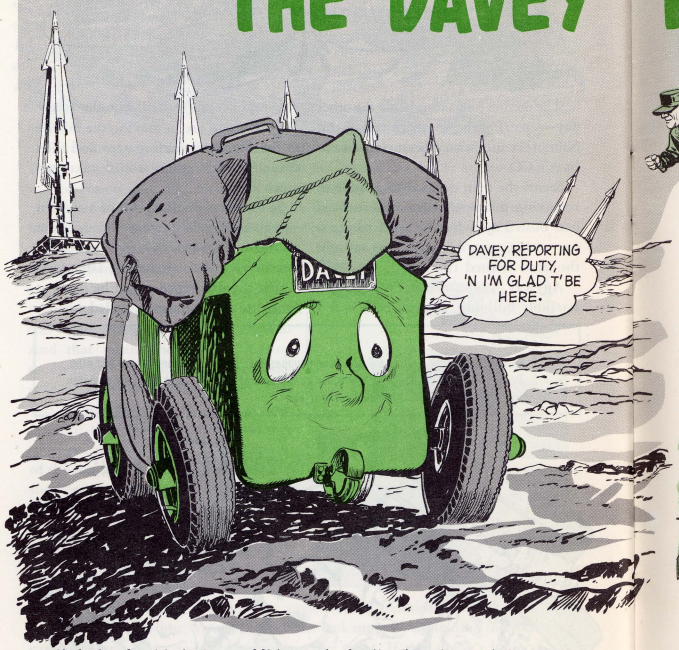


Shake hands with the latest addition to the family of Engineer missile support equipment—the Davey RPC-15 Rotary-Reciprocating Air Compressor. It's a lightweight, mobile, four-stage rig that'll give you 15 CFM at 3500 PSI.

It brings along with it a couple of firsts. Unlike the other high pressure air compressors now in use at Nike-Ajax and Hercules sites, the Davey is electrically driven. It's rigged so it can be used on either 440- or 220-volt, 3-phase, 60-cycle current, both of which are used at Nike sites.

Meet a Newcomer
To Your Missile Site . . .

THE DAVEY RPC-15



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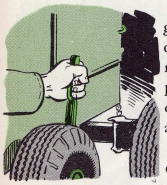
The Davey RPC-15 uses a rotary sliding vane for the first and second stages of compression which operates independent of the common reciprocating third and fourth stages. The rotary section is real compact and maintenance on your Davey has been cut down by eliminating valves, pistons, rings, and connecting rods. This section is also oil-cooled and uses its own air pressure to pressurize the oil for lubrication and cooling.

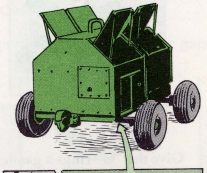
Your Davey's got the important job of putting the air charge in your missile. You can do your part by taking care of it and seeing that it's in tip-top shape to give out with the air.

BEFORE OPERATION

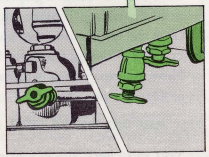


Park the Davey on level ground and give it the once-over to be sure it's ready to run. Give the parking brake a tug to double-check that it's set and it won't go rolling.

Now open all the panels. This'll give your rig plenty of breathing space.

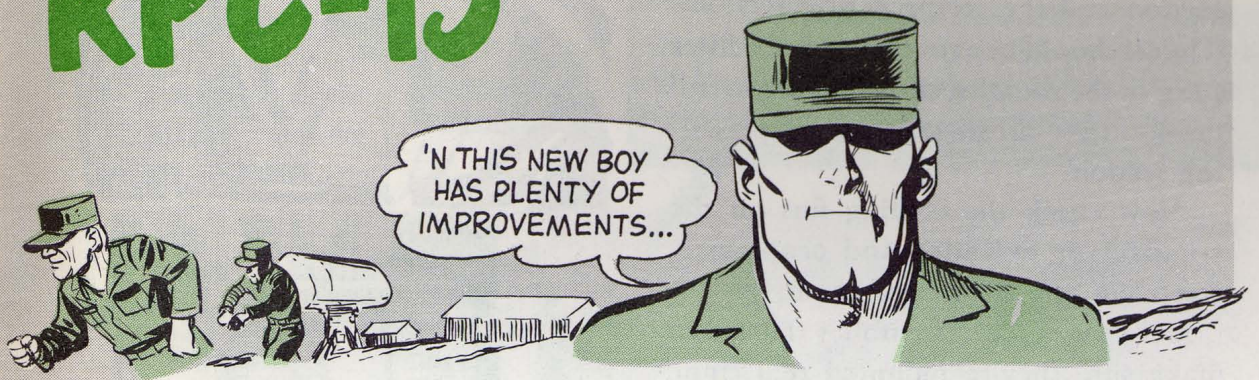


Then, you open all three oil drain valves and drain off the condensation. The two rotary compressor drain cocks are in the back of the compressor on the bottom of the rig under the control panel. The reciprocating compressor drain cock is on the left hand side of the machine directly behind the front wheel.



You keep 'em open until all the water runs out. When oil starts to show, close 'em.

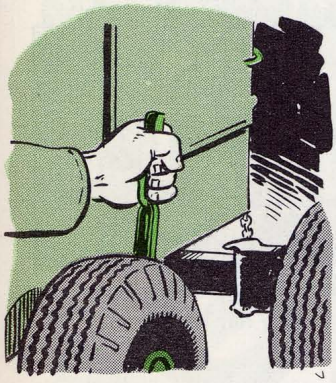
RPC-15



The Davey RPC-15 uses a rotary sliding vane for the first and second stages of compression which operates independent of the common reciprocating third and fourth stages. The rotary section is real compact and maintenance on your Davey has been cut down by eliminating valves, pistons, rings, and connecting rods. This section is also oil-cooled and uses its own air pressure to pressurize the oil for lubrication and cooling.

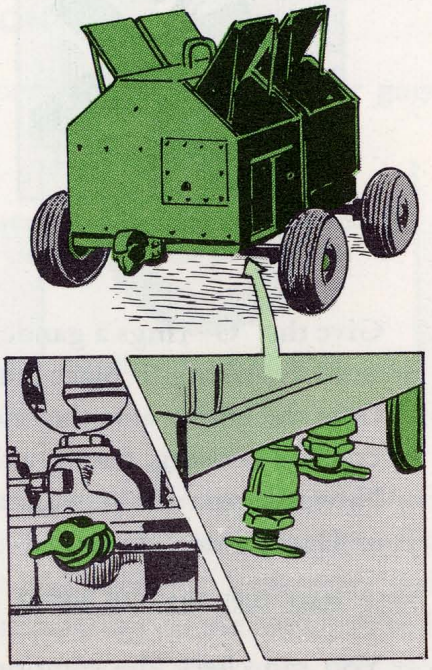
Your Davey's got the important job of putting the air charge in your missile. You can do your part by taking care of it and seeing that it's in tip-top shape to give out with the air.

BEFORE OPERATION



Park the Davey on level ground and give it the once-over to be sure it's ready to run. Give the parking brake a tug to double-check that it's set and it won't go rolling.

Now open all the panels. This'll give your rig plenty of breathing space.



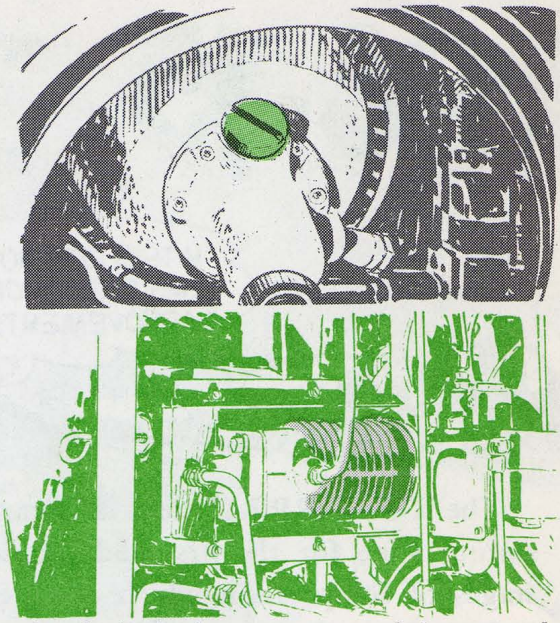
Then, you open all three oil drain valves and drain off the condensation. The two rotary compressor drain cocks are in the back of the compressor on the bottom of the rig under the control panel. The reciprocating compressor drain cock is on the left hand side of the machine directly behind the front wheel.

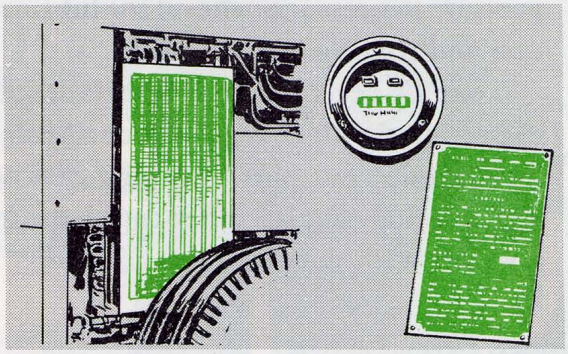
You keep 'em open until all the water runs out. When oil starts to show, close 'em.

Check the oil level in both the rotary section and the reciprocating sections. The oil should be at overflow at the filler plug in the rotary section and at the full mark on the dipstick in the reciprocating section.

Now check the cooling fins on the compressor cylinder and crankcase. Keep 'em free of dirt and crum.

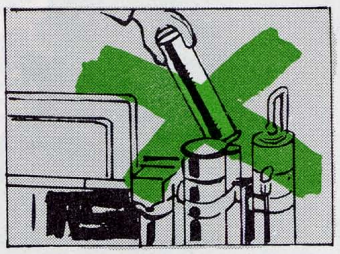
Give the cooler assemblies the eye to make sure they're mounted real tight and that the fins aren't bent or clogged.



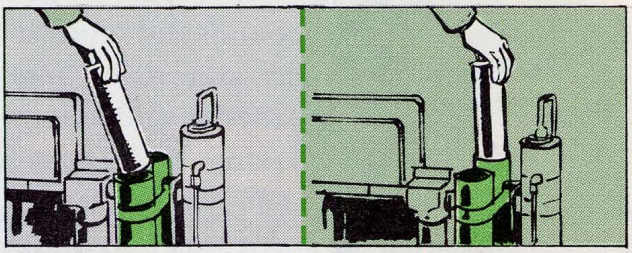


Eyeball the hourmeter and the record of the last dehydrator cartridge change that's listed on the instruction plate on the control panel lid. Change the cartridge if the next period of operation will go over the remaining useful life of the cartridge.

Under normal operating conditions you want to change the cartridge every 10 hours.



To change the cartridges, you throw away the cartridge in the No. 1 (inner) holder.



Then, you transfer the cartridge from the No. 2 (outer) holder to the No. 1 holder.

Give the "O" rings a gander when you're replacing a cartridge. If they're worn or need replacing, replace 'em along with the cartridge.

Give the entire unit the once-over for oil leaks, broken instrument glass, loose or cracked housing, frame, axle, damaged wheels, or drawbars.

Now, connect the power cable to your power source and you're ready to put your Davey into action.

FIRST, MAKE SURE THAT THE MOTOR IS WIRED FOR PROPER VOLTAGE AND HAS THE RIGHT ROTATION.

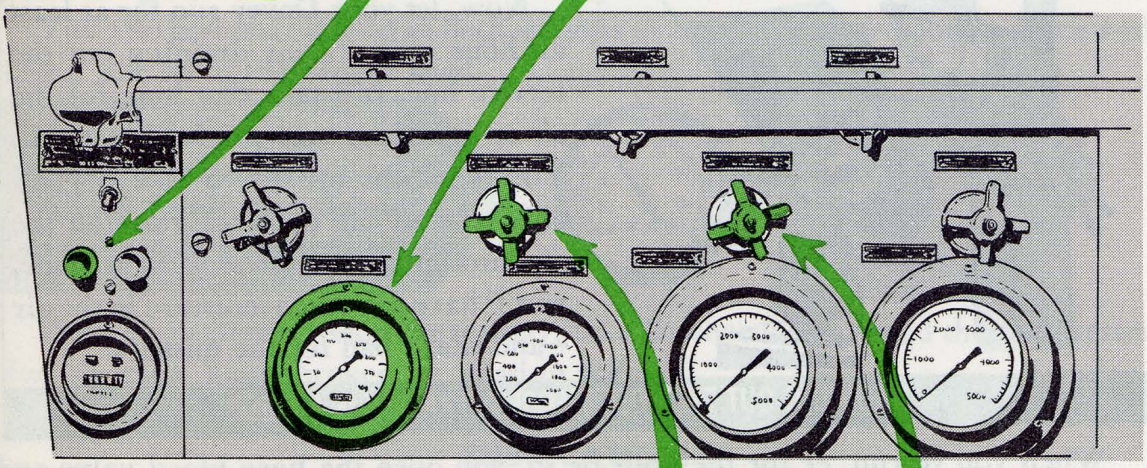
You can check the rotation by tapping the starter button. The rotary section should turn counter-clockwise—like the arrows on the housing show.

STARTING

Now, you open the fourth stage drain valve. Be sure all the other hand valves are closed finger-tight.

Push the starter button.

Give the second stage pressure gage a gander. If you don't get a reading, shut 'er down and report it to your section chief. Then, too, if the oil return valve isn't working, you shut 'er down and pass the word along.



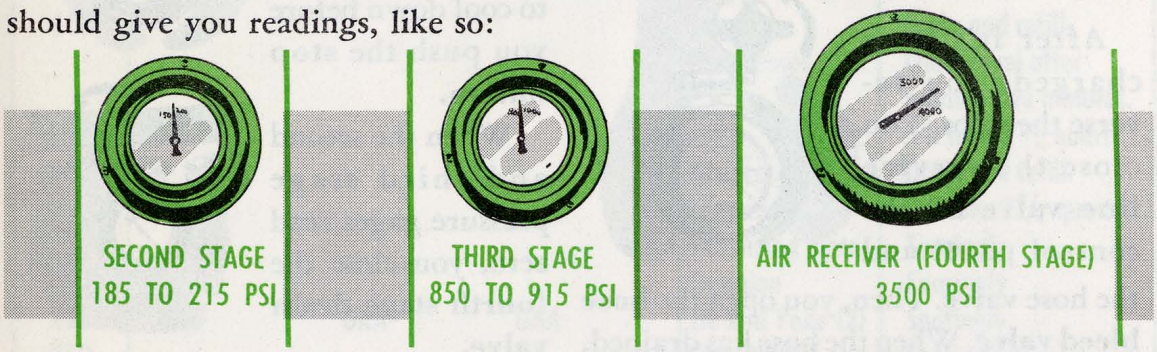
Now, you run the Davey for three to five minutes to let 'er warm up.

This done, you close the fourth stage drain valve.

Then, open and close the air receiver and mechanical filter drain valves to blow out condensation. Crack 'em slowly at first or you'll spray oil and water all over.

DURING OPERATION

When your rig is running under normal operating pressures the air gages should give you readings, like so:



You want to check the operation of the **oil return valve** to make sure that you have an oil and air mixture delivery at all times.

Check for any unusual noises or operation.

Blowdown the compressor by opening the **drain valves** one at a time. You do this real often—at least every half-hour—depending on the area you're in. The more humid the area the more often you have to drain.

When the pressure in the air receiver builds up to about 3000 PSI, you're ready to take the hose out of its rack, sandbag it on the ground, open the hose valve, and crack the service line valve. You sandbag it to make sure the end of the hose is secure and it doesn't whip—not only does a thrashing hose pack a lot of wallop and could cause serious injury, but it could also damage the hose valve.

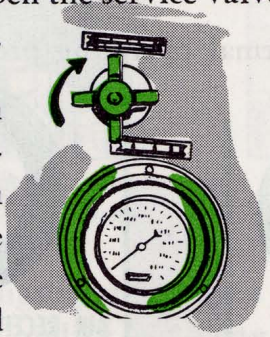
Now, let your Davey run for at least an hour with the air draining out the service line. It'll take that long for the air to get down to the right dew-point. You want the missile to take dry air only. If you cap it before running the air through the compressor for an hour, you'll have too much moisture in the air —and that's bad for the missiles.

BLOWING OUT THE HOSE BEFORE OPERATION IS A MUST!

When you've run 'er for the hour or so, you open the **hose bleed valve** and close the **service line valve.**

CHARGING THE MISSILE

To charge the missile, you connect the hose to the missile, close the **hose bleed valve,** and open the service valve and the hose valve.



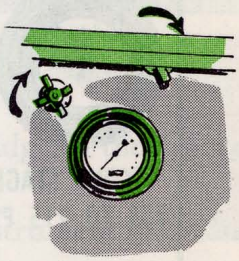
After it's been charged, you reverse the steps. You close the **service line valve** on the control panel and the hose valve. Then, you open the **hose bleed valve.** When the hose has drained, you disconnect the hose from the missile.

STOPPING

You blowdown the compressor by opening and closing each **drain valve** individually to get rid of the condensation.

Now, you open the **fourth stage drain valve.**

Then, let the compressor run for three to five minutes to cool down before you push the **stop button.**



When the second and third stage pressure gages read zero, you close the **fourth stage drain valve.**

If it's necessary or you want to drain the air receiver, open the **receiver drain valve.** You close it after all pressure has been released. Go easy when you open the **receiver drain valve** or the line will freeze.

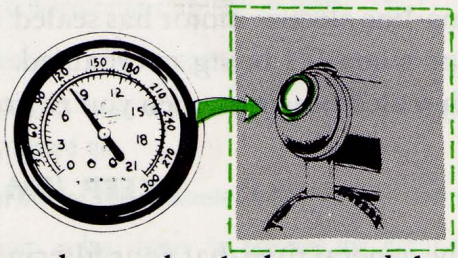
AFTER OPERATION

After you shut 'er down, disconnect the cable from the power source. Then check the cooling fins on the compressor and cooler assemblies. See that they're clean and free of dirt and scum.

Give the hourmeter and the dehydrator cartridge change record another look see. Change the cartridges if it's necessary.

You also give the oil level in both sections of the compressor another check and bring 'em up to the proper level.

REMEMBER, IF THE SEPARATOR PRESSURE GAGE ON THE ROTARY SECTION SHOWS PRESSURE, DON'T REMOVE THE FILLER PLUG OR OPEN THE OIL DRAIN VALVES.



Before you close up shop for the day, take another look around the compressor for oil leaks, loose, broken, or missing parts.

Now, you can close all panels and store 'er in a protected area.

LUBRICATION

Here's a rundown on the lubes your Davey takes:

HOURS	TEMPERATURE RANGE LUBRICANTS			COMPONENT	REMARKS
	ABOVE 32° F	32° F TO −10° F	0° F TO−65° F		
10				Rotary Comp.	Fill to Overflowing
10				Reciprocating Compressor	Fill to full mark on dipstick
50	Shell Tellus 72	Shell Tellus 41	Shell Aeroshell 1AC	Latches and Hinges	Lightly
100				Rotary Compressor	*Drain and refill. Check level after running five minutes. It'll take 2½ quarts.
100				Reciprocating Compressor	*Drain and refill. It'll take 2½ quarts.
250				Stabilizing Plate	Sparingly
250				Trunnion	Sparingly
250	GAA	GAA	GAA	Tie Rod Yoke (2)	Sparingly
250				King Pin (2)	Sparingly
250				Center Steering Arm	Sparingly
1000				Wheel Bearing	Remove wheel, clean. Inspect, lubricate bearings; reassemble.

Of course you'll want to dig up LO 5-4310-214-20 (7 Dec 59).

*These take 7 pints each, whenever the machine's been disassembled and all the oil's been drained off. You'll need only 2½ quarts for a normal oil change.

When you change oil in the rotary oil chamber, you refill it to plug level, install the filler plug, and run your rig for about five minutes. Then you drain the air receiver, remove the oil filler plug and add oil to the plug level.

When you change or add oil to the reciprocating crankcase, you fill it to the dip stick level mark. DON'T OVERFILL IT.

ELECTRIC MOTOR

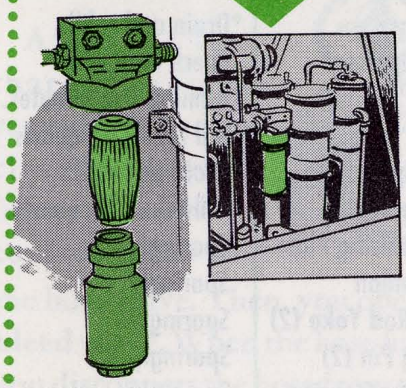
The Dyna-line electric motor has sealed bearings and doesn't need any lubrication—except when it's being overhauled. If you've got a rig that doesn't have a motor with sealed bearings, then you're going to have to lube it regularly.

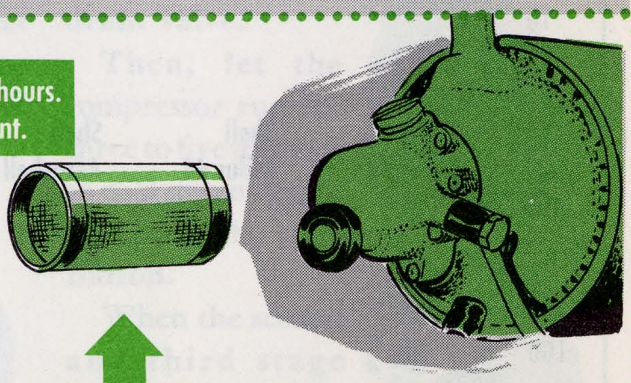
KEEP 'EM CLEAN

Here's the general time that your filtering and cleaning units should be changed. Your climate and temperature may vary a little, so you'll make your changes according.

	When the temperature is:	Change every:
Dehydrator:	−65° F to +70° F.	20 hours
	+70° F to +100° F.	10 hours
	+100° F to +125° F.	5 hours
Mechanical Filter:	Clean element in dry cleaning fluid every 50 hours. Don't use an Oil-Base Solvent.	

HIGH PRESSURE AIR FILTER: Check every 50 hours. Replace if dirty. Don't attempt to clean element.





OIL FILTER SCREEN: Clean in dry cleaning fluid every 100 hours. This screen is located on end or rotary section.

CONDENSATE TRAP: Clean screen every 50 hours with a non-flammable solvent.

You also clean the screen on the filter base of oil return valve every 500 hours. It's on the top of the oil separator.

MAINTENANCE AND SAFETY TIPS

You always open all valves and drain all the air from the compressor before you disassemble any part of it.

You don't ever adjust the pressure switch so that the automatic unloading pressure setting is more than 3700 PSI.

Never paint or cover the vent hole on the priority valve.

Always use a non-oil base cleaning solvent for the mechanical filter.

Always inspect the "O" rings when you replace a dehydrator cartridge or filter.

Be sure that the vent on the side of the unloader valve is always open.

When you clean the mechanical filter—every 50 hours—soak it in an approved dry cleaning fluid for about 45 minutes, then blow it dry with compressed air.

Always allow the compressor to warm up and cool off for three minutes when starting and stopping.

When draining the air receiver, you open the drain valve slowly to prevent the drain line from freezing up.

THE FILTER BOWL ON THE HIGH PRESSURE FILTER SHOULD BE INSTALLED WITH A FIRM TIGHTENING BY HAND. YOU COULD DAMAGE THE FILTER BOWLS AND "O" RING SEALS BY MAKING THEM TOO TIGHT.

You may hear a noise like coffee percolating at the oil return valve on the oil separator for several minutes after you shut down. That's OK.

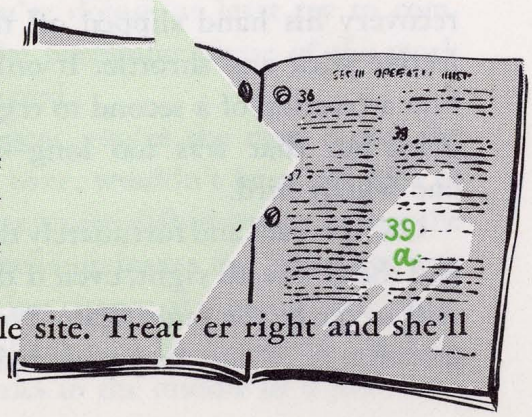
Always unload the compressor during the initial pressure build up to blow out any moisture and oil from the condensate chambers. You only want to open one drain valve at a time because they're all connected to a common manifold.

Always, but always, release the pressure from the service line before disconnecting it from the missile.

You don't use a wrench or tool to tighten the retaining screw on the dehydrators. Hand tight is good enough.

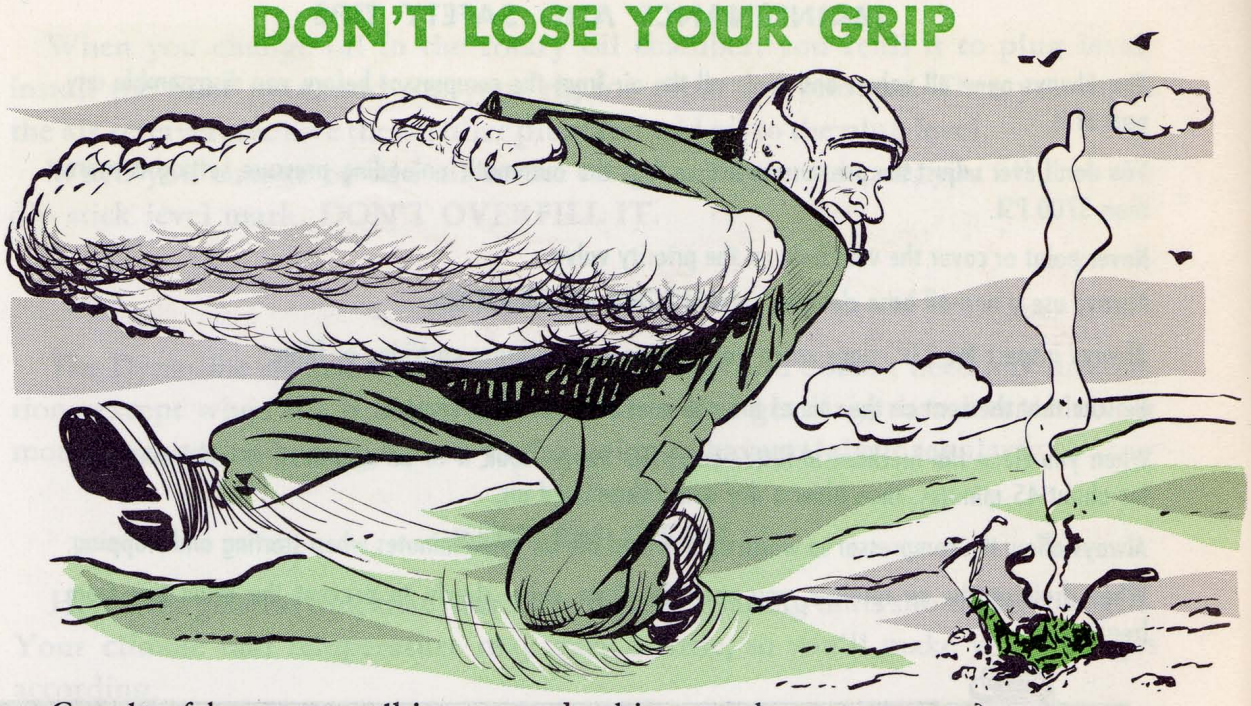
Never paint the fins on the cooler assembly. It's the same as putting a coat on 'em and it'll overheat in no time at all.

Another thing—pin this with para. 39a, TM 5-4310-214-10: Caution: Do not attempt to restart the compressor when the air receiver gage exceeds 3000 PSI. You release the pressure by opening the fourth-stage trap drain valve before restarting.



Your Davey's found a home at your missile site. Treat 'er right and she'll treat you right.

DON'T LOSE YOUR GRIP



Couple of boys are walking around in the borrowed time class but good. They survived the total destruction of their Sioux helicopter, and when total is said, **total** is meant because the wreckage was complete.

Comes how this busted bird? Well, the man was doing autorotations — power recovery autorotations. Naturally, after he split his needles, he held down hard on the collective stick to keep up his RPM.

But unfortunately he was flying barehand, and it was a hot day, so naturally his hand was damp with perspiration. When he started to apply power for the recovery his hand slipped off the collective stick and throttle. It only took him a fraction of a second to regain his grip, but that was too long—scratch one whirly-bird.

OK, too bad, and fortunately the pilot and the IP are all right, even if the bird will never be the same again. Now, the question is: What can you do to be sure this never happens to you?

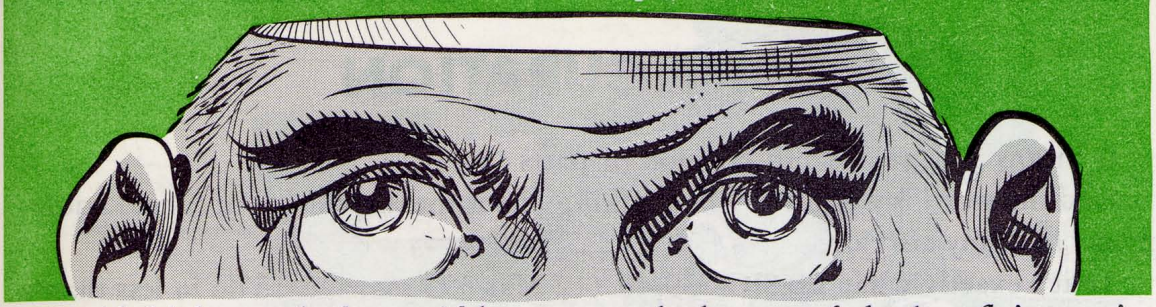
Most important, perhaps, is just to know and remember that it **has** happened, which proves it **can** happen.

Which thought should remind everybody to be sure of his hold whenever he's moving into close quarters, whether with the ground, obstructions or even other aircraft. The same goes for any of you mechanics authorized to run up this chopper. Be sure of your hold on that throttle—and check to see that the pitch stick's tied down securely.

There's a lot to be said for wearing light leather gloves, even in warm weather—perhaps particularly in warm weather, when hand sweat is probable. That's **light** gloves, remember. Heavy gloves are out—you can't get the proper feel with 'em.

Just in passing, you'll be happy to know that they're thinking about putting deeper grooves into that control handle too.

DOGGONE IT, DUCK!



You'd think everybody would know by now that an H-13 rotor blade can swing low enough to strike a man walking under it.

But there's a man in hospital right now who was scalped by the Sioux as neatly as his Granpappy got it with Custer. He forgot to duck and got caught by one of the low flying main rotor blades while leaving the chopper after shutting down. Fortunately the blades were turning slowly, so the one that caught him didn't kill him. But it gave him an awful belt that really peeled his knob.

Leave us keep our heads down, what?

STICK WITH IT

Many a half-tightened nut didn't stick around long in flight when the mechanic didn't stick with the job on the ground. Switching mechanics in the middle of a job is one of the best ways to set up an aircraft for an accident.

The mechanic taking over may start his maintenance where he thinks you left off. He might never see that half-tightened bolt, the missing safety wire or the adjustment you didn't have time to finish. When you are called off the job you're doing, at least try to complete the particular phase of the work you started.

Happens you're the man doing the taking over, wouldn't be a bad idea to call over an aircraft inspector before the first mechanic leaves the job. That way there's less chance of missing something.

Of course, whenever possible, it's always a good idea to plan and schedule your work so you won't have to switch mechanics in the middle of a job.

Webster Has a
Word for it . . .

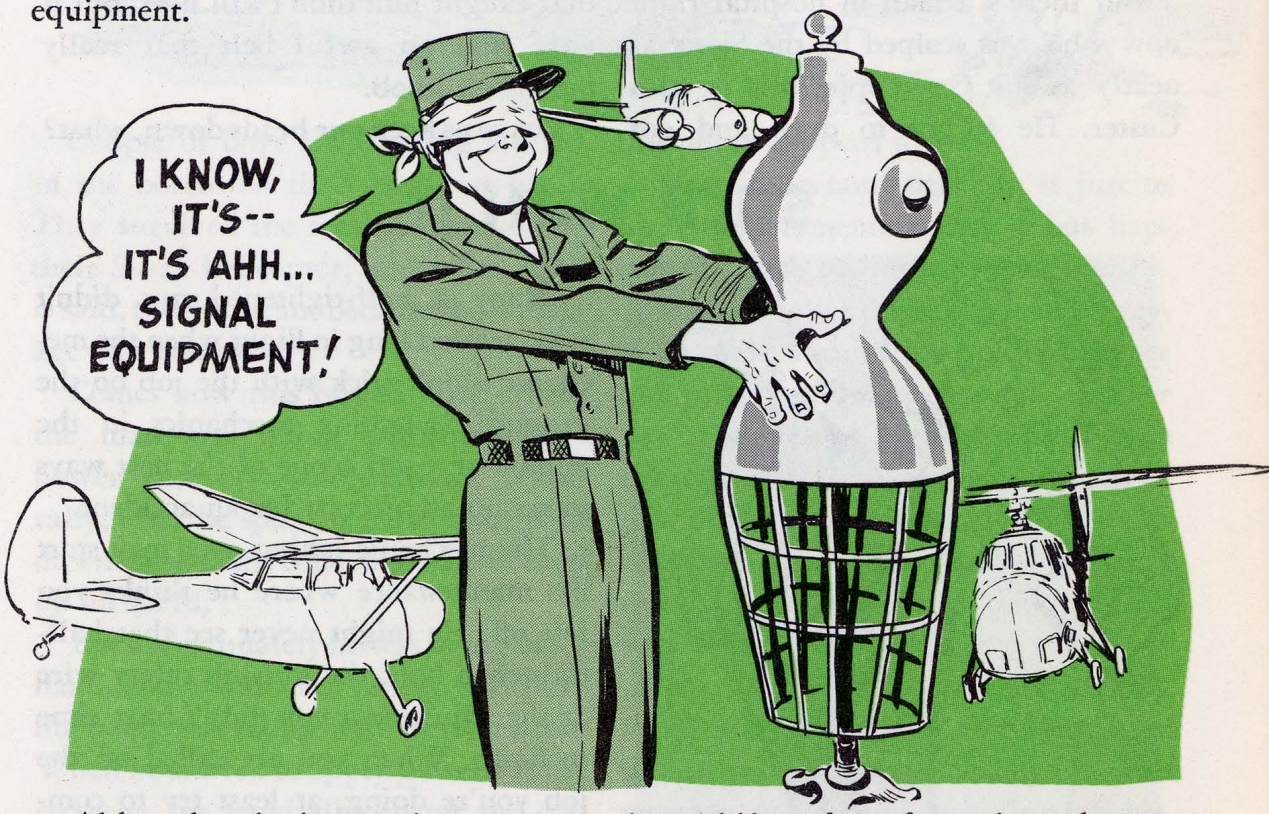
CONFIGURATION

It means ". . . relative disposition of parts . . ."

And the word is well used when talking about the disposition of Signal equipments in Army aircraft.

That's exactly what TB SIG 239-40 (12 Mar 59) manages to do in less than a dozen pages, too. It lays out various configurations of Signal equipment installed or scheduled for installation in Army aircraft now in use. No small task in itself.

Does it by type and geographical location. Not to mention the tools, test equipments and Department of the Army technical literature needed to maintain the equipment.



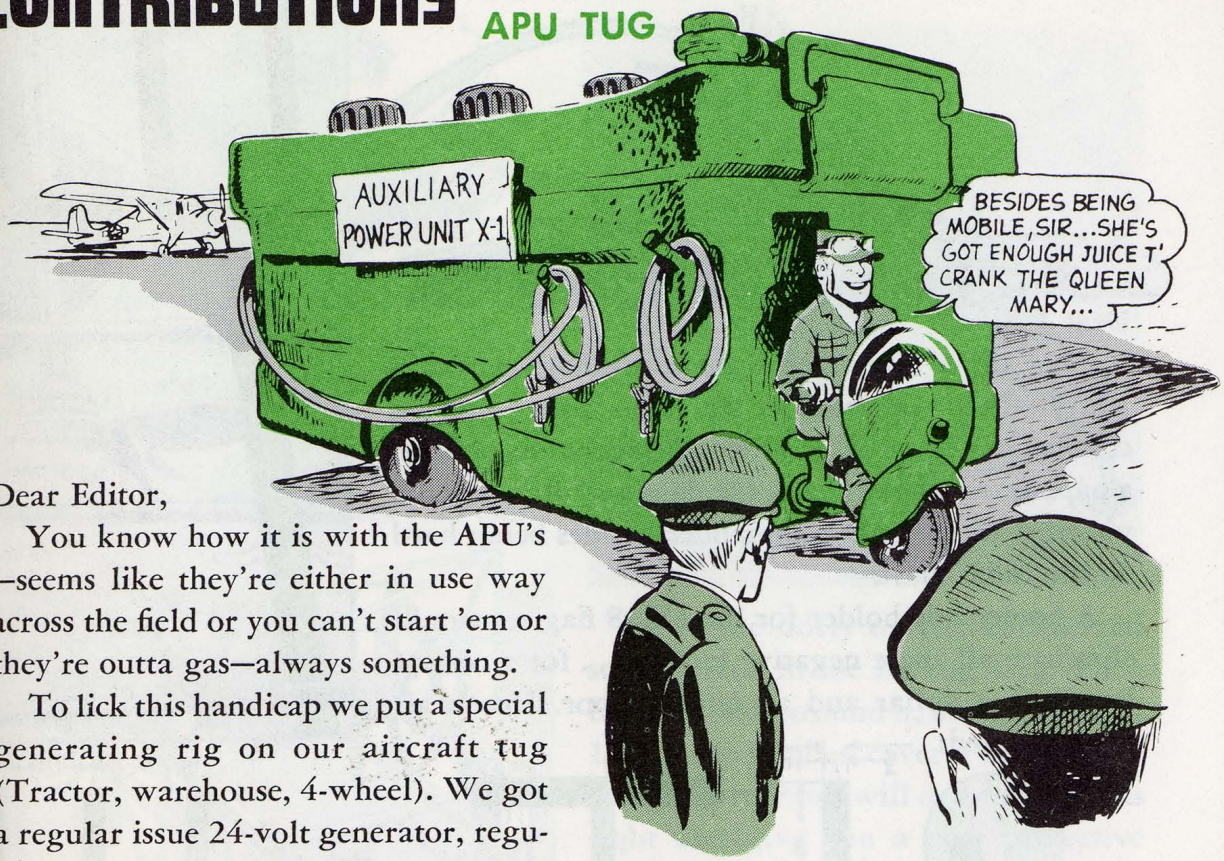
Although avionics requirements sometimes shift and configurations change, the maintenance literature references in this TM stand pat except for the supply manual descriptions.

Your Sig 7&8 is now "Repair Parts and Special Tools List" (RP and STL) and carries TM numbers. For example: The AN/ARA-31. The first and second echelon RP and STL for this equipment is TM 11-6625-221-12P and the third, fourth and fifth echelon RP and STL for the same equipment is TM 11-6625-221-35P.

If you're an avionics maintenance man, TB SIG 239-40 is one of the most useful guides you can get.

CONTRIBUTIONS

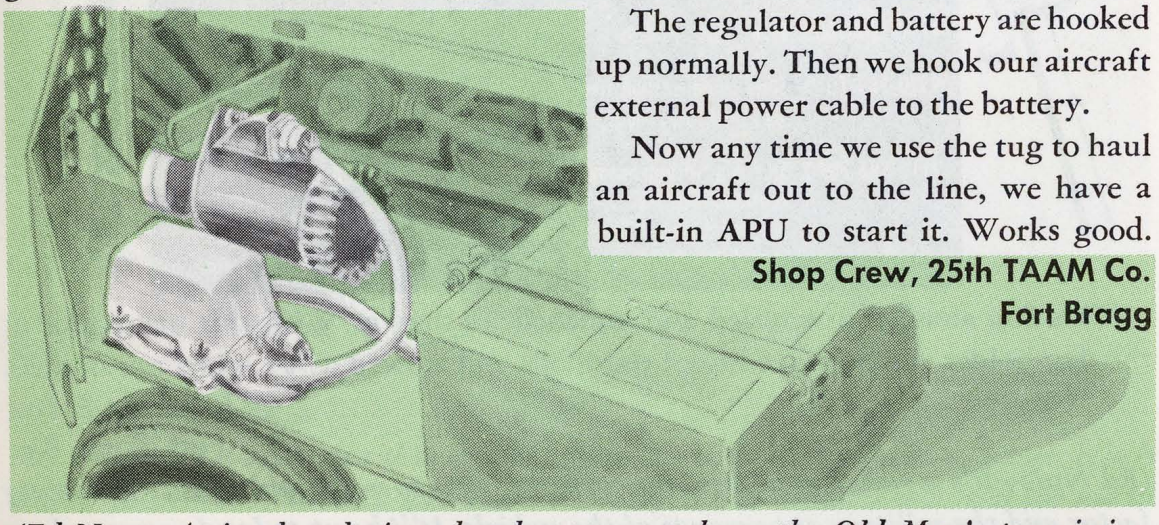
APU TUG



Dear Editor,

You know how it is with the APU's—seems like they're either in use way across the field or you can't start 'em or they're outta gas—always something.

To lick this handicap we put a special generating rig on our aircraft tug (Tractor, warehouse, 4-wheel). We got a regular issue 24-volt generator, regulator and battery and mounted 'em on the left fender of the tug. We drive the 24-volt generator by taking the double groove pulley off it and putting it on the 6-volt generator of the tug. Then we take the single groove pulley from the tug generator and put it on the 24-volt generator. A short commercial fan belt runs from the spare groove on the tug generator to the other one and powers it.



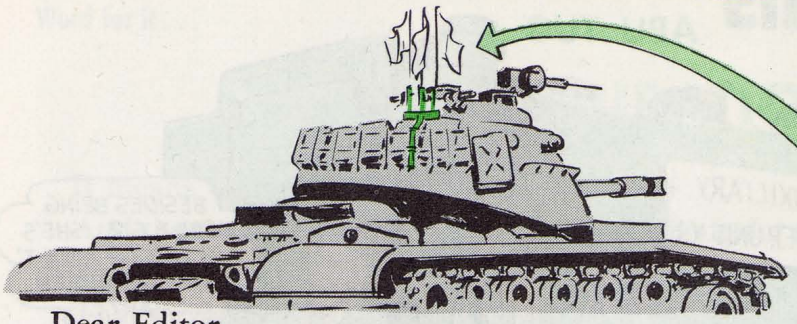
The regulator and battery are hooked up normally. Then we hook our aircraft external power cable to the battery.

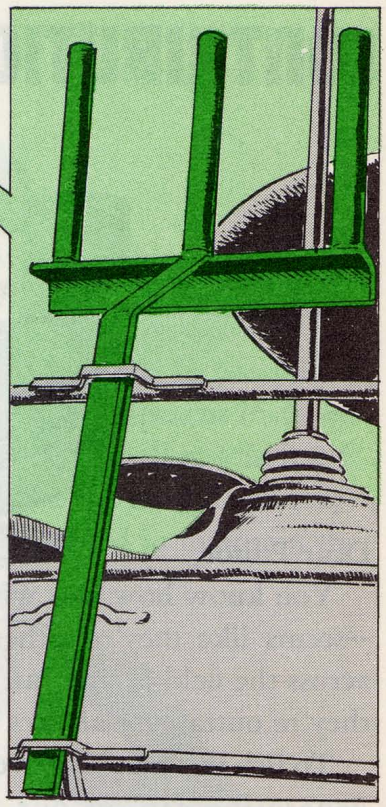
Now any time we use the tug to haul an aircraft out to the line, we have a built-in APU to start it. Works good.

Shop Crew, 25th TAAM Co.
Fort Bragg

(Ed Note—A simple solution—but be sure you have the Old Man's permission. Thanks for sending along the snapshots.)

A FIRM STANDS

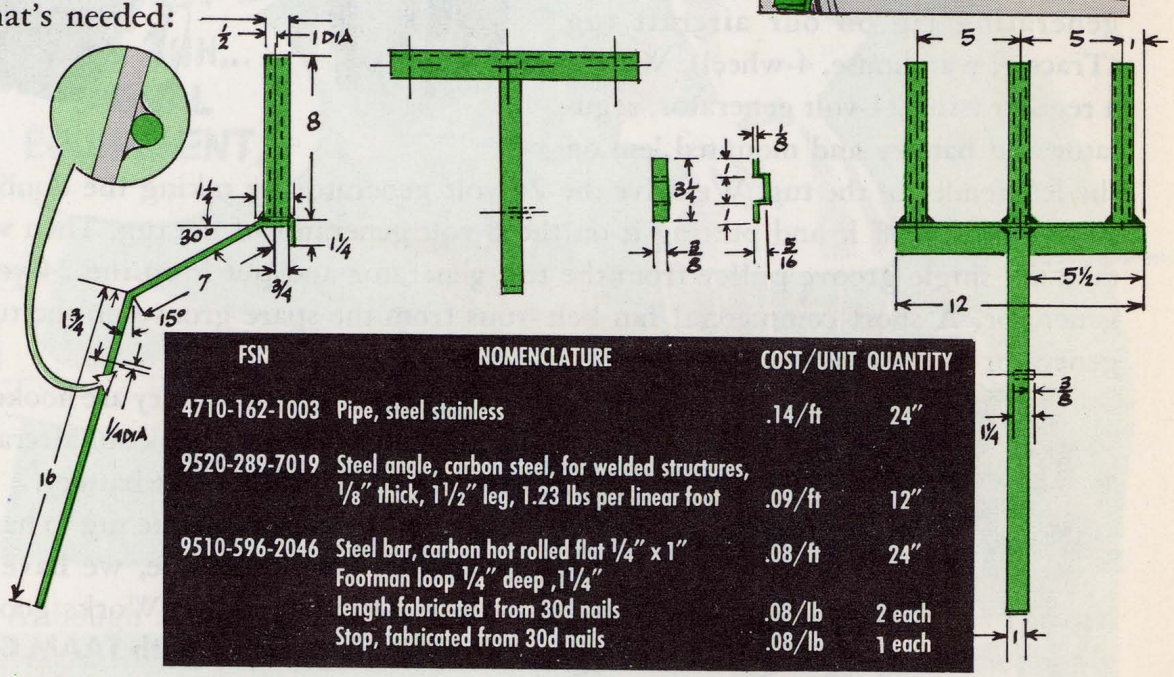




Dear Editor,

Most times when you want to fly flags on tanks you attach or tie them to the radio mast or to the commander's cupola. This usually means loss of flags, a haphazard way of flying the flags and obstructs the visibility of the tank commander besides being hard on the radio mast.

A homemade holder for the M238 flag set would eliminate all these negative factors . . . for a cost of less than a dollar and an hour's labor. Here's all that's needed:



FSN	NOMENCLATURE	COST/UNIT	QUANTITY
4710-162-1003	Pipe, steel stainless	.14/ft	24"
9520-289-7019	Steel angle, carbon steel, for welded structures, 1/8" thick, 1 1/2" leg, 1.23 lbs per linear foot	.09/ft	12"
9510-596-2046	Steel bar, carbon hot rolled flat 1/4" x 1"	.08/ft	24"
	Footman loop 1/4" deep, 1 1/4" length fabricated from 30d nails	.08/lb	2 each
	Stop, fabricated from 30d nails	.08/lb	1 each

This flag stand is assembled and attached as shown. With this arrangement the flag-holder can be taken out of the loops and stowed away when not needed.

SP 5 James E. Fox
Fort Knox, Ky.

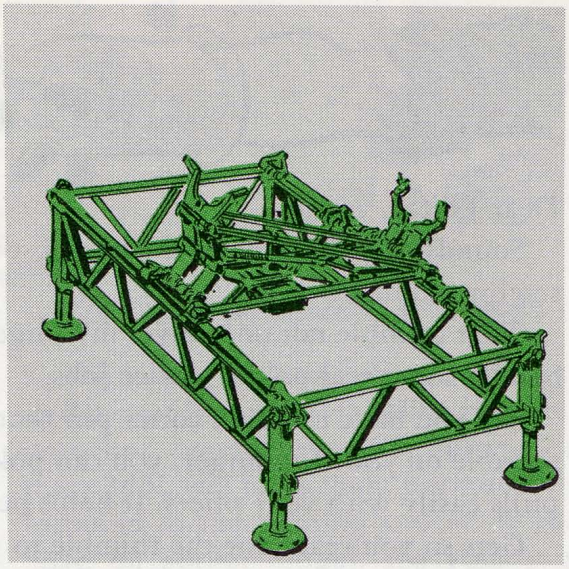
(Ed Note—It's a real sharp idea—inexpensive, easy to make and adds to the safety factor and the military appearance of the vehicle. It'll be up to local commanders, though, to adopt it as SOP in their outfits.)

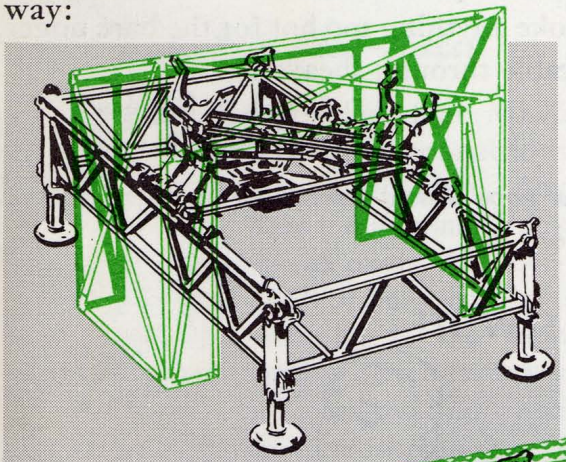
SNUG SHELTER

Dear Editor,

Why not cut down maintenance time on the universal dolly at missile sites by building a shelter over it?

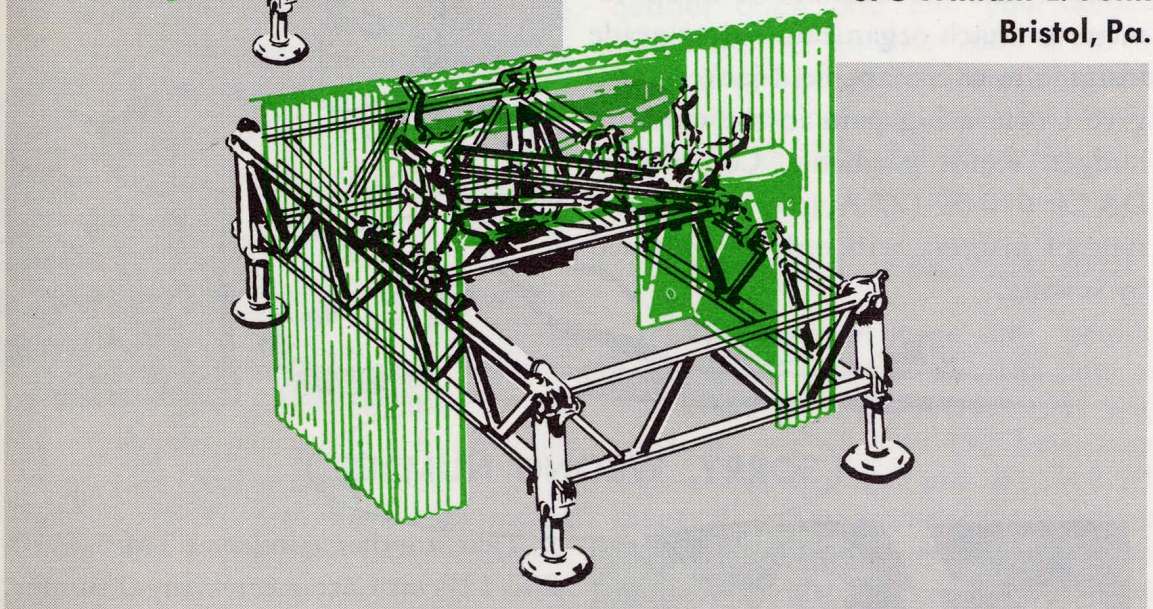
Instead of storing the dolly in the trailer, where it's hard to get at for maintenance servicing, here's an easier way:





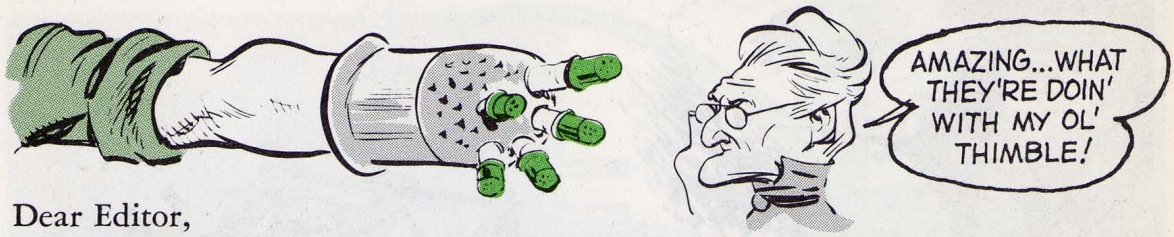
Place the dolly on the authorized storage rack in the fueling area. Then build a frame around it, using 2 x 4 and 1 x 6 scrap lumber, cover it with canvas and paint it. Paint will draw the canvas tight and give you a neat protective cover.

SFC William L. Funk
Bristol, Pa.



(Ed Note—It's a neat idea that would appeal to a lot of missilemen, Sarge. Hitch is that you want to be sure you make it out of non-flammable material for use in the fueling area. Organic materials like wood and canvas are strictly no-go. They ignite too easy.)

FOREARM YOUR FOREFINGER



Dear Editor,

Sounds silly, but one of the handiest maintenance items I own is an old beat-up sewing thimble.

That thimble not only saves my fingernails and knuckles—it actually helps me handle some real pokey service jobs.

Say you have to pull a cotter pin that's buried in a hard-to-reach spot. With a thimble on your forefinger, you can poke in there and bend the ends so's the pin pulls easily with your pliers. It helps put cotter pins back, too.

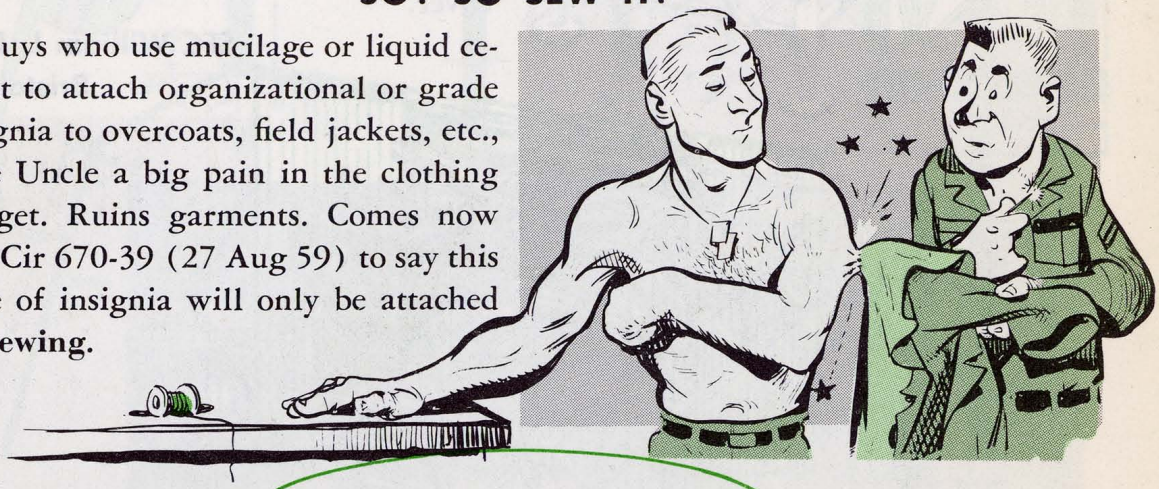
Gets so you reach for the thimble to poke anything too hot for the bare finger, or to handle a touchy job like guiding cable through sheaves.

SFC J. P. Rogers
Fort Bliss, Texas

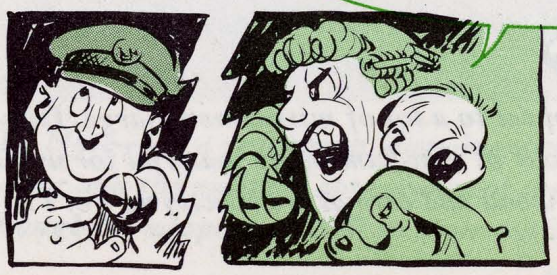
(Ed Note—Darned if you haven't got a good thing threaded up there, Sarge. Hope your outfit doesn't needle you about it.)

SO? SO SEW IT!

Guys who use mucilage or liquid cement to attach organizational or grade insignia to overcoats, field jackets, etc., give Uncle a big pain in the clothing budget. Ruins garments. Comes now DA Cir 670-39 (27 Aug 59) to say this type of insignia will only be attached by **sewing.**

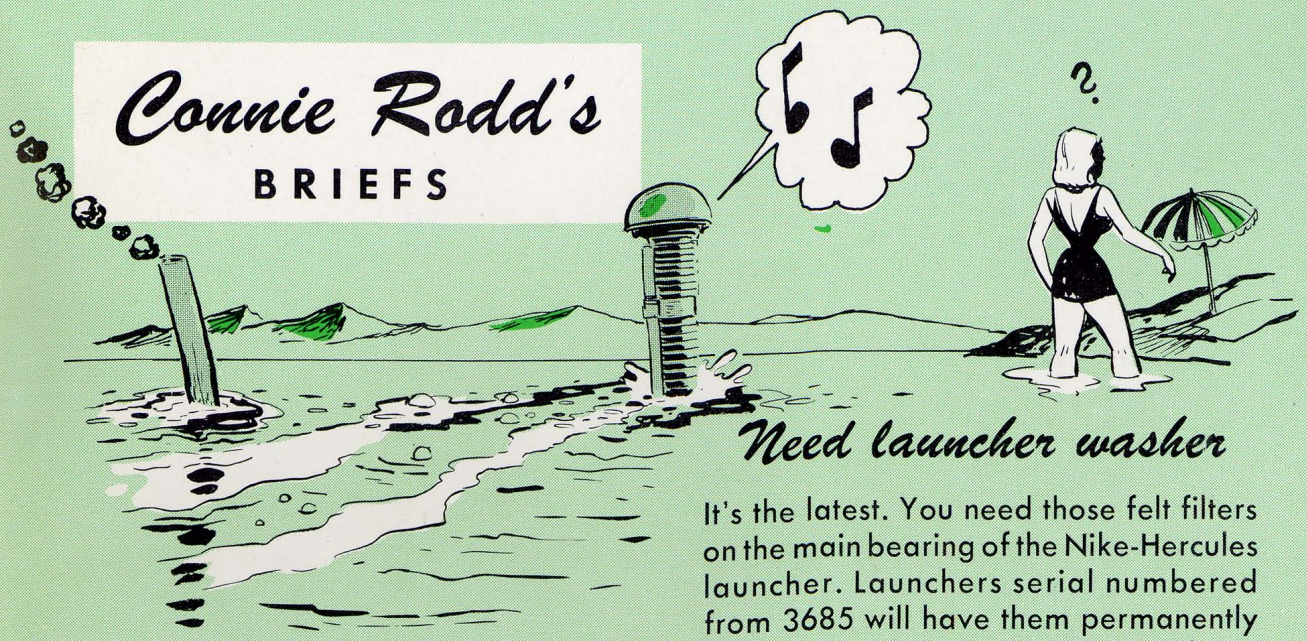


SORRY, WRONG NUMBER



Take another gander at TM 5-4310-207-12P on Carter centrifugal pumps, models 7M, 7MCW, and 7MCW-2 with Carter engine, model ABN. The number on the cover is wrong—read it TM 5-4320-207-12P.

Connie Rodd's BRIEFS



Tighter tow-hold

A heavy load behind that M125 10-ton truck calls for tight connections between the truck and the tow. Any looseness in that heavy duty pintle hook may let the load break away. The lockwasher and jam nut that hold the pintle hook and rear adapter to the front adapter have been known to work loose. So give 'er a once-over now and then and tighten as needed. If the pintle lockwasher's defective, replace it.

Faulty M1 firing pins

Hold it! Your M-1 rifle could have a faulty firing pin that'll break off at the tip.

Which means it could get wedged in the bolt or jam up between the bolt and the cartridge, giving you a fixed firing pin action. Mighty dangerous.

These faulty pins have tool marks around the tip, causing them to break. The marks are so small it'll take a magnifying glass or expert eye to spot them—your armorer may have to get help from your support unit to spot them.

Need launcher washer

It's the latest. You need those felt filters on the main bearing of the Nike-Hercules launcher. Launchers serial numbered from 3685 will have them permanently fastened to the bearing spacer. If you have an earlier model, see your support people about getting permanent washers for your launcher. They're FSN 5330-622-1764.

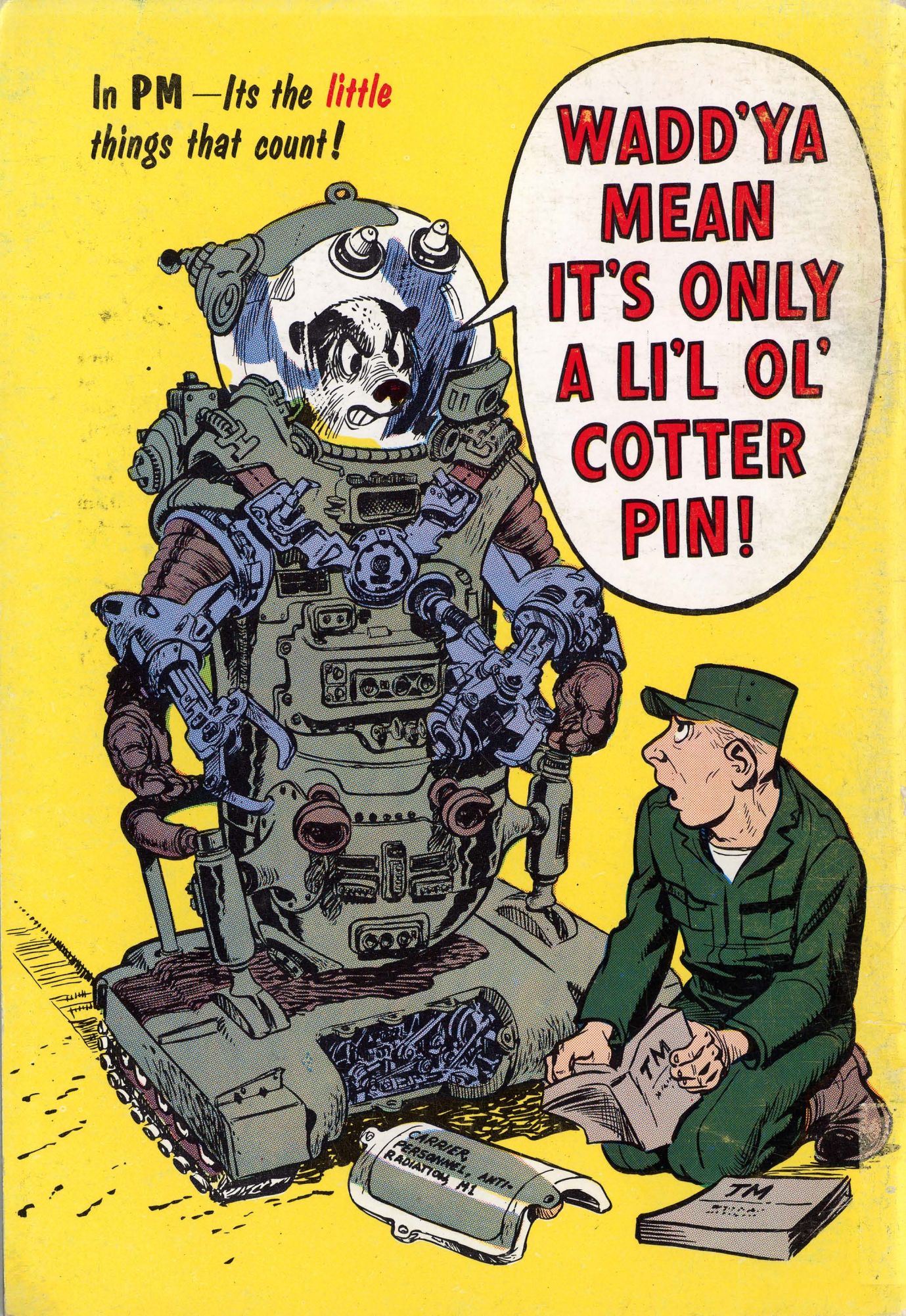
Off to the right start

You M48A2 medium tankers and M51 TRV drivers want to be sure you haven't got your hand throttle more than one-quarter open and that your engine speed doesn't go over 2000 RPMs . . . when first starting. This heavy hand or foot method can ruin your fan rotors. TB 9-259 (4 Sept 59) gives the poop on this.

New cold weather pub

Remember that those old, reliable, publications on cold weather care of vehicles, TM 9-2855 (Jan 51) with changes, and TB Ord 193 have been superseded by a later pub. It's TM 9-207 (Sept 59) and goes under the handle of "Operation and Maintenance of Ordnance Materiel in Extreme Cold Weather O° to —65° F." It's a mighty good thing to have in the brass monkey temperature zone.

Would You Stake Your Life on the Condition of Your Equipment?


In PM—Its the little things that count!
WADD'YA MEAN IT'S ONLY A LI'L OL' COTTER PIN!
CARRIER PERSONNEL, ANTI-RADIATION M1
TM
TM